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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Castleford and Other Inquests

IT is unusual to have so close together no fewer than three inquests relating to explosions occurring in chemical operations—one at Castleford dyestuffs works, a second at Billingham, and a third at St. Helens. The comparative rarity of such occurrences is a testimony to the skill with which chemical plant is now designed and the care with which it is operated. The handling in large quantities of chemical substances of an inflammable or explosive character involves an inevitable element of risk, but so well is this guarded against that very rarely, indeed, does anything seriously go wrong, and still more rarely, when this does occur, is it found to be due to negligence or want of foresight. So thorough also is the research into the cause, that each accident leads to additional knowledge that makes its repetition less likely or possible.

The inquiry at the Castleford works of Hickson and Partners, which has been very thorough, has resulted in two clear findings—the first that the fire and explosion were caused by the entry into an acid mixer of some nitro body, though how the latter entered is not clear; the second that the cause was "accidental and not due to negligence." This is as satisfactory as it can be, and all the friends of the firm will be glad to know that its directors and managers are relieved from any anxiety on that side. At the Billingham works an aluminium tank connected with that part of the plant where acetaldehyde is oxidised exploded, killing one workman and injuring others. The earlier reports mentioned a larger number of casualties and gave an even more serious character to the accident, but these it appears were due to rescue efforts on the part of other workmen and were not regarded as serious. The accident, according to the finding of the jury, was caused by the accidental bursting of an aluminium acid tank due to the detonation of an explosive gas. In due course, there will be the usual official report, and some further light may possibly be thrown on the matter. In the Triplex glass accident, the explosion occurred in the course of boiling under pressure, and here again there is no disclosure of negligence. Regrettable, therefore, as all such accidents are, it is satisfactory at least to know that they all fall within the narrow margin of risk that is inevitable in such operations, and were not contributed to by any human default of duty.

There is one personal result following upon the Castleford disaster that will be universally deplored. That is the death of Mr. Ernest Hickson, the head of the firm, at the age of 72. There can be little doubt that it was hastened by the shock and anxiety produced by the mishap at his works. Mr. Hickson had held an honoured place in the English dyestuffs industry throughout a long life, and it is particularly sad that his career should close under this sorrow. To his family and business associates, with whom the sincerest sympathy was expressed in the misfortune to their works, will now be extended condolences of a more personal character.

Condensed or Oxidised?

COAL is so much the burning question of the day that one is justified in observing that anything can have happened in relation to it and that practically everything has, except the proof by the chemist what coal is and the explanation by the geologist how it has been formed. These questions appear at least as difficult of solution as the more unpopular ones of working hours and levies, but there are some indications of progress along new lines of thought, which are both suggestive and provocative.

For some time past Professor Bone has been studying the products obtained on oxidising with an alkaline solution of potassium permanganate either coal itself or the residue left after extracting it with benzene under pressure. Somewhat unexpectedly, these have proved to be in the main a mixture of benzene carboxylic acids amounting to 48 per cent. of the carbon of the coal, together with carbon dioxide and a little acetic and oxalic acid. All the 12 possible acids containing up to six carboxyl groups have been identified with the exception of benzoic acid and one of the

tetra-carboxylic acids : the mean composition approximates to that of benzenetricarboxylic acid, from which fact the deduction is drawn that about one-third of the carbon of the coal substance appears in C_6 rings of benzenoid acids.

The significance of this discovery must be considered in relation to the very large proportion of benzenoid compounds in the form of phenols and, in particular, cresols produced on carbonising coal at low temperatures. Although it should have been known from the early work, this fact has had to be rediscovered rather painfully by the commercial low temperature processes ; the high proportion of phenols detracts materially from the commercial value of the distillates produced and indeed sets problems for their economic utilisation which still await complete solution. From two sides there is thus evidence that coal consists primarily of benzene nuclei, linked together through carbon ; since such compounds are not present in wood or in vegetable matter, it is clear they must be formed during the change into coal.

Professor Bone has examined coals of various maturity and geological age, *e.g.*, brown coals, lignites, bituminous coking and non-coking and semi-bituminous coals. All give practically the same yields of crystalline organic acids on oxidation. This would seem to indicate that much of the organic matter originally deposited in the incipient coalfield had soon acquired a benzenoid structure which it preserved during the subsequent maturing throughout geological ages. Such results force the conclusion suggested to the Royal Society both by Professor Armstrong and by Professor Bone, that coal is no mere residue, but a synthetic re-wrought material, analogous to synthetic Bakelite, in which phenol and its homologues are condensed with formaldehyde and with amino bodies. The raw material of coal must have been collected away from oxygen under water ; it is not the outcome of any mere oxidation process.

The Samuel Report of 1925 devotes several pages to the question of research on coal ; the World Power Conference triumphantly holds meetings in Berlin. Meanwhile work—serious, significant, suggestive, successful—is quietly going on in South Kensington ; the Waterloo of the future will not be won on the playing fields of Eton !

"Milk of Magnesia"

THE Judge in the District Court of Connecticut, U.S.A., has just delivered a judgment of considerable interest, invalidating in effect the well-known trade mark "Milk of Magnesia." The trade mark "Milk of Magnesia" was registered in the United States under No. 46,225 on September 12, 1905, and a companion trade mark, No. 75,501, was issued October 12, 1909, for the Spanish equivalent of the words of the first mark, *Leche-de-Magnesia*. Both registrations cover a preparation of magnesia which is widely advertised. The plaintiffs were McKesson and Robbins, Inc., and the defendants the Charles H. Phillips Chemical Co.

After certain technical questions as to jurisdiction, etc., were disposed of by the court in favour of the plaintiffs, the court briefly reviewed the new evidence submitted showing prior adoption and use of the mark "Milk of Magnesia" by others as proof that the registration was improper. The registration of these words was under the ten-year clause of the Trade Mark Act of February 20, 1905. This Act prohibits the registration of descriptive terms as trade marks, but the ten-year clause permits the registration of marks which have been in actual and exclusive use as a trade mark by the applicant or his predecessors for ten years next preceding February 20, 1905. There was, of course, no question of the descriptive character of the words "Milk of Magnesia."

The plaintiffs were able to show that these words were not originated by the defendants, but were found in numerous publications issued many years prior to the application for registration and alleged date of first use by defendants. The records show that hydrate of magnesia, which is the technical term for "Milk of Magnesia," was sold by many others beside the defendants during the ten-year period above referred to, and that various firms used exactly the same words to designate their product. Therefore, since the defendants were not the sole and exclusive users during these ten years, they were held to be not properly entitled to registration. The second trade mark, *Leche-de-Magnesia*, was registered solely upon the strength of their registration "Milk of Magnesia. This trade mark, the court held, must fall with the latter.

Getting Prices Down

THE return to normality after the upheaval of the war is a long, painful and difficult process, of which such troubles as unemployment are only a part. The difficulty is largely due to uncertainty as to what "normal" means. It is by no means to be assumed that we are going back to pre-war price levels, but it is quite certain that we must get sooner or later on to a natural price level. That process will not be complete until the inflation and all the other artificial price arrangements of the last fifteen years have been absolutely wiped out.

Meanwhile the wholesale price level has reached the lowest figure since the war. *The Times* index, published recently, gave the level of wholesale prices at 116·3 or 2·2 per cent. lower than a month ago, 11·8 per cent. below a year ago, and 15·4 per cent. lower than the corresponding figure at the beginning of 1929. Retail prices, however, have shown no such reduction, and the disparity between wholesale and retail prices is one of the most disturbing factors in the economic situation. Commodity prices fall, wages fall or people go out of work ; yet when they go shopping they are astonished to find that what was cheaper at the factory remains at the inflated price in the shop. The most glaring examples of this difficulty are to be found in food. The present price of bread is about double pre-war price, while the price of wheat is close to the pre-war level. Coal is not quite but nearly as bad. The difficulty is spread more or less over the whole realm of retail trading, and presents a problem with which many of our readers are intimately concerned.

Books Received

ECONOMIC CONDITIONS IN PORTUGAL, March 1930. By A. H. W. King. London : H.M. Stationery Office. Pp. 66. 2s.

THE SPIRIT OF CHEMISTRY. By Alexander Findlay. London : Longmans, Green and Co., Ltd. Pp. 480. 10s. 6d.

Recent Chemical Industry Disasters

Cause of the Castleford Explosion

The dangerous nature of certain branches of chemical industry is illustrated by the public inquiries into recent chemical explosions at Castleford and St. Helens, and the report of another fatal explosion at the Billingham Works of Synthetic Ammonia and Nitrates, Ltd.

EVIDENCE as to the probable cause of the explosion at the chemical works of Hickson and Partners, Ltd., Castleford, on July 4, was given at Castleford, on Monday, at the resumed inquest on the thirteen men who lost their lives. The jury found that the explosion occurred in an acid mixer, owing to the accidental presence of some nitro body.

George Herbert Frank, of Carleton, technical director and works manager of Hickson and Partners, Ltd., said that he was present at the works at the time of the explosion. The first indication occurred seven or eight minutes before noon, when there was a cloud of brown fumes about 30 ft. high over, as he thought, part of the nitration plant.

Witness was in the laboratory near to the entrance to the works at the time, and when he saw the fumes he ran towards where the men were shouting "fire." When he had advanced about four more strides there appeared to be a bright light in the direction of the fumes. Then there was a big roar. By that time witness had advanced sufficiently to see that the nitration plant was all right, and that the fumes were behind the nitration plant.

The explosion took place in the acid mixing section. The plant in which the nitric and sulphuric acids were mixed was a steel shell about eight feet by eight feet, having a fixed top with a manhole. A steel shaft drove an agitator for cooling purposes in the vessel itself. The nitric acid, which was stored in drums, was rolled up to a nitric acid "egg," a large cylindrical vessel of cast iron.

Mixing the Acids

Nitric acid was siphoned out of a metal drum into the "egg" and was blown into the mixer by compressed air. Sulphuric acid was supplied to the mixer from one of three vessels, acid being taken from all these at one time or other, the liquid reaching the "egg" by gravity in one case and compressed air in the other two. There were two acid mixers, and one was under repair at the time of the catastrophe. The outlet from the mixer was by a pipe from the bottom into storages. The acids were mixed in specified quantities—six drums of nitric acid to 6½ tons of brown oil of vitriol. The supply was controlled by one man, who received from a foreman instructions as to quantities. The sequence followed in mixing was that brown oil of vitriol, or double oil of vitriol, as the case might be, was put in, and a sample drawn and tested in the laboratory for benzol. From the result of the test, it was possible to tell how many drums of nitric acid should be added. This was decided by the foreman. Before any nitric acid was put in, the test of the sulphuric acid should be completed.

The Coroner: Is this mixture inflammable?—It is non-inflammable. Neither nitric acid nor sulphuric acid will burn.

Nor the mixture?—No.

In reply to a question as to whether he had ascertained whether the mixer or the "egg" were exploded, witness said both the mixers had disappeared, and an old "egg" not in use had been blown into fragments. The "egg" which was in use was also smashed.

The Coroner: What was the general effect of the explosion?—It seemed as if there had been an enormous wind. Walls were pushed over, and the plant to the south side of the mixers was moved bodily for some distance.

Cause of Explosion

The Coroner: Have you any opinion to express as to what there was in the mixing plant to cause the fire or explosion?—There should be nothing in that place to cause the outbreak. The process has been carried on since 1915, with mixings two or three times a week, and there has never been a fire or explosion in that department before.

Answering questions about the sulphuric acid tanks, witness said that a certain amount of nitro-carbon body might have got into the sulphuric acid; but, even if there was, he did not think this caused the explosion.

Witness expressed the opinion that the cause of the explosion was that some form of hydrocarbon found its way into the mixer, or the neighbourhood of the mixer.

The Coroner: What forms of hydrocarbon could have found their way there?—We have in the works benzol, toluene, xylene; but I don't see how they could have got there.

There was no means by which benzol from the main storage tanks could have got in or near the mixer, said witness, and it was not likely that whoever put nitric acid into the mixer accidentally used a benzol drum.

Questioned by Mr. John Law, H.M. Superintending Inspector of Factories, Sheffield, witness said that he did not think the presence of a nitro body in the mixer would have caused an explosion. "There is one possibility," he said, "and that is that the agitator failed, and had there been a boil-over there might have been a fire and brown fumes, but not an explosion."

Mr. Bishop handed to witness the bung of a nitric acid drum, which has to be opened with a special key, and witness said the possibility of confusing one drum with another and using the contents of the wrong drum, was very small. In his opinion, the explosion was a vapour explosion.

Process Worker's Evidence

Arthur Edwin Swales, process worker, of Long Acre, Castleford, who was in charge of the mixer on July 4, said he was working under no instructions except those of a foreman, W. F. Matthews, who died in hospital from injuries received in the explosion. At about 10.30 a.m. he started to make a mixture. He blew between 7 and 8 tons of sulphuric acid into a mixer, and took a sample through a manhole. He then started blowing the nitric acid into the mixer from the "egg." He had placed the nitric acid in the "egg" from drums brought from the water side. There was no doubt that they were all nitric acid drums. He saw the liquid going into the "egg" and it was nitric acid. When he had started the nitric acid he took the sample of sulphuric acid to the laboratory. There was no one near the "egg" or the mixer. He had just got into the laboratory when he heard Matthews shout "Fire." He had not left the mixer for a minute. If, while he was away with the sample something went wrong with the agitator, or there was a "boil over" or anything, there was nobody there to deal with it. When Matthews shouted "Fire," witness looked through the window, and saw flames but no fumes. The fire came out of the mixer top.

The Coroner: You are quite sure it was not a fire outside the mixer?—Yes.

Have you any doubt the explosion occurred around by the mixer?—No.

Swales added that there were no signs of any fumes or vapour around the mixer when he left with the sample. The nearest benzol pipe was about 13 yards from the mixer. He switched on the agitator before he started blowing nitric acid into the mixer, but it might not have started.

The Coroner: The agitator might not have started while the nitric acid was coming in?—No.

And yet you started putting in nitric acid?—I switched the agitator on.

But you did not make certain that it started?—No.

Hubert Hoyle, nitric and sulphuric acid manager, of Lower Oxford Street, Castleford, said he had spent a fortnight studying the possible cause of the explosion, and in his opinion there was no explanation other than the presence of hydrocarbon.

Inspector of Factories

Sidney Herbert Newman, Engineering Inspector of Factories, who carried out a general investigation with Dr. Watts, said that the conclusion he had reached, in regard to the possible origin of the fumes seen in or near the mixer, was that they were the result of a nitration taking place in the acid mixer. Only the introduction into the mixer of some organic material would cause that nitration to take place, and the nitration

would be quite different from the nitration that went on in the nitration plant, in the sense that it would be uncontrolled nitration. In the mixer there was no cooling either in the form of coils or a water jacket. There was no thermometer, and there would be no control of the rate in which the nitric acid was added to the organic material. The temperature within the mixer would rise. Brown fumes, he thought, would come off and there might be a " boil over." In certain circumstances, the nitric acid that boiled over could easily cause a fire. An explosion might or might not follow.

A number of experiments had been made, said witness, to determine the presence of the nitro-body. Sulphuric acid taken up from this boiler had been stirred in a beaker and nitric acid run in, and the temperature had risen very quickly to over 100 degrees centigrade. The nitric acid had boiled and brown fumes had been given off. Further experiments had shown that the nitro-body was inflammable.

Dr. Hugh E. Watts, H.M. Inspector of Explosives, gave evidence similar to that of Mr. Newman.

The jury found that the explosion occurred in the acid mixer and was caused by the presence of some nitro body, that it was accidental and there was no negligence. They recommended that in future samples of the acids should be taken and tested before being placed in the " eggs " or vessels through which they were supplied to the mixer.

The coroner said that this was a verdict of death from misadventure.

Fatal Accident with Autoclave

Resumed Inquest on St. Helens Glass Works Tragedy

THE inquest was concluded at St. Helens, Lancs, last week, into the accident at the new Triplex Northern Safety Glass Works, Eccleston, St. Helens, on May 21, when Dr. F. N. Kerr, the works chemist, and William Cowell, a workman, were fatally scalded by water and steam from an autoclave.

James Holmes, autoclave operator, employed by the company, said he was engaged with Cowell completing an experiment on a batch of glass in the autoclave. Dr. Kerr was also standing by, waiting for the process to be completed.

Mr. L. Forbes, the works manager, explained that the pressure in the autoclave was not allowed to go beyond 300 lb. to the square inch. After the steam was applied to the jacket, which surrounded the autoclave, it was left for about seven minutes. Cowell then opened the air valve, and the boiling water and steam gushed out and scalded them. They staggered away for some distance, and help was rendered to them. Everything was done as usual, and Cowell told him that the water in the chamber was six inches below the level of the lid.

Miss Hastings, the factory inspector, in answer to the coroner, said the autoclave had all the usual fittings, but she thought that probably the water in the chamber had been heated above boiling point. It might be that a pocket of steam had been formed, and when the lid was raised the steam would expand and force the boiling water to burst out on to the men.

The coroner inquired if there were any regulations which had not been observed.

The Inspector: No. Since this accident the firm have gone into the matter very fully, and additional precautions will be taken in future; but I understand that on this occasion they were taking more precautions than the makers of the autoclave thought were necessary.

Mr. Davies, who represented Mrs. Cowell, asked witness if there was anything on the autoclave to tell them the level of the water.

Witness: No.

The Coroner said it appeared that they needed an apparatus so that the men outside the chamber could tell exactly the level of the water inside.

"On a Volcano"

Mr. Forbes stated that he had inquired into the matter afterwards, and it appeared that the water inside the autoclave was in an unstable condition. When this water was still inside the chamber nothing happened, but when the lid was released there was an effusion of steam. " They had already done the same thing about a dozen times, and we had apparently been sitting on a volcano which we did not know of." Witness further said that they had changed the method of heating the autoclaves and put the steam jackets inside, and had put trycocks on the machine so that they could regulate it better and know the level of the water inside.

Witness, in answer to Mr. Davies, said it seemed that the autoclaves had been too full of water. They had worked with it at the same level all along, but apparently it had been risky. These machines were used in the chemical industry for boiling things under pressure, but it was a new thing for them to be used in safety glass manufacture. They had been used for some time in Birmingham, but there were two very serious scalding accidents when they were used in an horizontal position. Consequently the autoclaves were now constructed in an upright position in order to make them safer.

A verdict of " death from misadventure " was recorded, and Mr. Compton Carr, on behalf of Dr. Kerr's relatives, returned thanks for the kindness they had received from the chairman and directors of the Triplex Company.

Workman Killed at Billingham

Explosion in Acetic Acid Plant

THERE was a fatal explosion in the acetic acid plant at the Billingham Works of Synthetic Ammonia and Nitrates, Ltd., on Saturday last. It appears that the plant had been working normally when an aluminium tank connected with that part where acetaldehyde is oxidised suddenly exploded. One of the men working the plant received injuries, from which he died in a few hours, but all other men employed in the building, to the number of fifteen, were able to leave. After the explosion the aldehyde vapour liberated from the system took fire, and caused two or three minor explosions, but there were no further injuries. The fire was not serious, and was put out by the plant fire squad in ten minutes.

In addition to the workman who was killed, three other men were engaged in the immediate neighbourhood of the tank and they were admitted to hospital suffering from shock and burns. Their injuries are not serious.

As soon as it was realised, after the fire had been put out, that one man had not been able to leave the building, strenuous efforts were made to rescue him. In this operation several men sustained burns from acetic acid and two were detained in hospital. In addition to the injuries enumerated above, four other men were sent to hospital but were not detained, and ten men were treated in the plant ambulance room for shock and slight burns; these men have now resumed work.

The material damage is estimated at about £1,200.

At the inquest held at Stockton on Wednesday, Dr. Herbert H. Hirst, manager of the acetic acid plant, said that the explosion was a gas explosion. He personally examined the plant the night before, and it was running perfectly. They could not form any opinion as to the cause of the explosion.

The verdict on Thoms was that death was due to shock from extensive burns, caused by the accidental bursting of an aluminium acid tank, due to the detonation of an explosive gas.

The Coroner paid tribute to the bravery of the rescuers.

Sudden Death of Mr. Ernest Hickson

Echo of Works Explosion

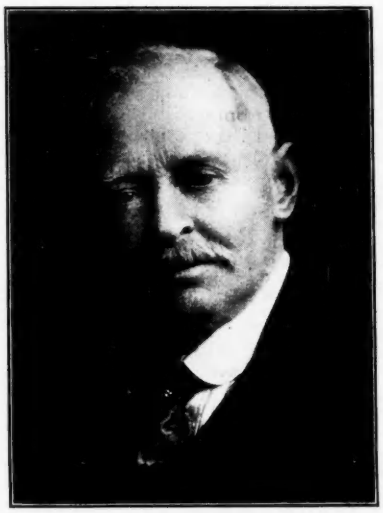
WE regret to record the sudden death at Bedford on Tuesday night of Mr. Ernest Hickson, who, until his retirement recently, was a director of Hickson and Partners, Ltd., of Castleford. He had lived in Bedford only five weeks and the explosion at the works of his firm, after he left, is thought to have affected his health.

Mr. Hickson, who was 72, was born in London, and spent his early days in Northampton, where his father was a partner in the firm of William Hickson and Sons, who owned one of the largest boot and shoe factories in the town. At the age of 15 he went to Hanover for three and a half years, where he studied chemistry and physics. After leaving Germany in 1875, he started his business career with a firm of export merchants in Paris. In 1877 he became foreign correspondent of Brooke, Simpson and Spiller, then the foremost colour manufacturers in the world.

There were no facilities in London at that time for acquiring technical knowledge with regard to dyeing, but he experimented with the dyes made by his firm in a portion of a small

office. He succeeded in dyeing wool, silk, and cotton with the full range of colours made by his firm. In 1883 the firm decided to open a branch office in Bradford, and Mr. Hickson was put in charge and became a director.

Mr. Hickson began business on his own account as a dry-salter and dye merchant in 1803, and later started the firm of



MR. ERNEST HICKSON

Rexoll, Ltd., at Shipley, for the manufacture of sulphur black, but after these works had been burnt out twice he removed to Wakefield.

On the invitation of the War Office in 1914 he formed the firm of Hickson and Partners, Ltd., and erected works at Castleford for the manufacture of T.N.T., becoming chairman and managing director of the company. The works were converted into a model factory for the manufacture of intermediates and dyes after the war.

Mr. Hickson was closely connected with the Society of Dyers and Colourists from its birth and was one of the last surviving original members. He was a member of the first council and had served on it continuously.

New German Chemical Apparatus

Descriptive Notes at the Achema Exhibition

IN connection with the Achema VI Exhibition of Chemical Apparatus held at Frankfort-on-Main, a series of technical and scientific lectures was organised. The lectures were worthy of note for two reasons: firstly, as a function closely connected with the exhibition, possessing considerable value as propaganda, and secondly on account of the lectures themselves, which disclosed new and important points in the various fields of work of the numerous exhibitors, and led to interesting discussion.

The series of lectures on "The use of nickel and its alloys in the construction of apparatus," by Mr. Obermüller, of the Berg-Heckmann-Selve Co., Altena, Westphalia, began on June 12, being introduced by Dr. Bretschneider, the organiser of the exhibition. The lectures on the building material question played an important part in the complete programme. Dr. Singer of the Deutsche Ton- und Steinzeugwerke, Berlin, stressed this point in his lecture on "The advances in the building material industry," in which he paid special attention to the acid-proof materials produced by firing.

Acid Proof Cements, etc.

In his lecture on "The application of prodorite in the chemical industry," Dr. Schoeller, of the Prodorite Co. in Mannheim, mentioned the special advantages of Prodorite as an acid-and alkali-proof material possessing the rigidity of reinforced concrete. Dr. Heinrich Becker, of the Keramchemie Berggarten G.m.b.H., Gieben, lectured on "Kerasolith and its application." Kerasolith is a fire and acid-proof mechanically strong packing material, which is particularly suitable for liquid tight joints between materials of different character. "New fireproof ceramic materials for laboratory use" formed the topic of the lecture by Dr. Hermann Schiller, of the Sanitäts-Porzellanmanufaktur W. Haldenwanger, Berlin, who described the gas-tight Pytagoras suitable for combustion and pyrometer tubes, Sillimantin for insulating purposes, and Silicarbin which is remarkable for its minute coefficient of expansion. A well-known building material was described by Dr. Rick, of Stuttgart, in his lecture on "The protection of reinforced concrete from chemical action." Dr. Bruckmann, of the Deutsche Ton- und Steinzeugwerke A.G., Berlin, dealt with the constructive application of this material in a lecture entitled, "Advances in Construction."

In his lecture on "New types of liquid measuring instruments," Mr. Lots, of R. and G. Schmöle, Menden, introduced the liquid-level indicator of his firm, which, independently of the density of the liquid, indicates accurately the quantity of liquid in the container and may be used for indicating the results at a distance. Mr. Schwarze, of Frankfort, described the "Heating and cooling of metallic apparatus" as carried out by the firm of Samesreuther and Co., with the aid of Samka Tubing, which is welded to the surface to be heated or cooled, thus assisting conduction of heat.

Solvents and Purifying Agents

Dr. G. Weibenberger, Cheminova, Berlin, spoke about the "Wash process for the recovery of volatile substances and the results of rationalisation." He observed that the results of the latest physical investigations were embodied in the apparatus of the firm of Martini and Hünecke G.m.b.H., Berlin. This subject was exhausted by the lecture by Mr. E. Reisemann, of the Lurgi Gesellschaft für Wärmetechnik, Frankfort, on "Economic and technical problems related with the recovery of solvents, *e.g.*, benzine and petrol, with the aid of active charcoal." He pointed out the various possibilities of application of this method in the manufacture of artificial products and in the lead-pencil industry, and gave a short survey of what had already been carried out in this field, paying special attention to the more recent development of the activated charcoal process for the recovery of benzene from coal and water gas.

"The preliminary treatment of gases in the chemical Industry" formed the subject of a lecture by Dr. Fiesel, of the Lurgi Gesellschaft G.m.b.H., Frankfort. He sketched the development of large-scale apparatus for this purpose and mentioned the special advantages of the electrical method of purification which, in combination with coolers, if necessary, led to a degree of purity not possible to attain by ordinary mechanical methods.

The technical application of the astonishing power of adsorption of Silica Gel was dealt with by Mr. F. W. Krull of the Silika Gel Gesellschaft m.b.H., of Berlin, in his lecture on "Silica gel and the state of development attained in its technical application." For about five years plants have been in operation without the least diminution of its efficiency for the drying of gases, the recovery of volatile solvents, the refining of mineral oils and also in the contact process for sulphuric acid manufacture. New fields of application are constantly being discovered.

Dr. Bailleuil, of the Lurgi Gesellschaft für Wärmetechnik, Frankfort, referred to the "Application of active charcoal to the purification of water, particularly drinking water," in his lecture under that title. Activated charcoal, he contended, is the only means of removing unpleasant taste and smell from surface water.

The mechanical purification of liquids and the separation of solid and liquid substances was the subject of a lecture by Dr. Keller, of the Seitzwerke, Kreuznach, entitled "The Seitz sedimentation filter and its application in chemical industry." The apparatus works on a similar principle to the Gooch crucible, asbestos fibre being deposited on a perforated base for the purpose of holding back the finest particles of impurity.

Dr. Smolczyk opened up the field of "Chemistry and Hygiene" with his lecture on "Chemical Oxygen Breathing Devices," by which expression, it is understood, the consumed oxygen is generated by a chemical preparation.

The Draft Regulations for Chrome Plating

Discussion by Electroplaters and Depositors' Society

The Home Office has prepared draft regulations for the protection of those engaged in the practical operations of chrome plating, and a discussion on the proposals took place on July 23 at a meeting of the Electroplaters and Depositors' Technical Society in London. Dr. R. S. Hutton, President of the Society, was in the chair, and the object of the meeting was to hear an explanation of the reasons that have led to the drafting of the proposals from Dr. S. G. Overton, one of H.M. Medical Inspectors of Factories.

THE effect of the processes involved in chromium plating has been the subject of careful investigation by H.M. Medical Inspectors of Factories in the course of which 223 persons were examined. Of these, ninety-five were found to have dermatitis or circumscribed ulcers or scars of old ulcers, nasal changes were observed in 116, perforation of the septum in 37, and ulceration or devitalisation of the mucous membrane in 79. Ulceration of the nasal mucous membrane was seen after only two weeks' employment, and the length of employment of those who showed perforation of the nasal septum varied from six months to four years. These effects, it is stated by the Home Office Inspectors, are caused by the spray carried into the atmosphere by the evolution of the gases from anodes and cathodes, and it is said that this risk can only be eliminated by efficient exhaust ventilation. In all but one of the works visited, some form of mechanical exhaust was found to be applied to the tank. The best method of applying exhaust was found to be by lateral exhaust ducts for removal of gases from both anodes and cathodes just below the edge of the tank and 6 inches to 8 inches from the surface of the solution. It would seem, according to those who carried out the investigations, that to ensure the effective removal of the spray where lateral ventilation is provided, the distance between the surface of the liquid in the tank and the duct opening should not be less than 8 inches.

The Regulations for Employers

Dr. Overton, who said that whatever views she might express were in an unofficial capacity, emphasised that there was no evidence to suggest that there was such a thing as chrome poisoning. In drawing up the Regulations, every endeavour had been made to ensure that they should be sufficiently elastic. For instance, there was the Exception Clause, which stated conditions under which exemption from the Regulations might be obtained on satisfying the Chief Inspector of Factories of exceptional circumstances, such as the infrequency of the process, or for other reasons. The Chief Inspector, in his discretion, could issue a certificate of exemption from all or any of the regulations.

The following are the Draft Regulations for occupiers or employers :—

1. At every vessel in which an electrolytic chrome process is carried on, an efficient exhaust draught shall be provided by mechanical means and shall operate on the vapour or spray given off as near as may be at the point of origin, so as to prevent it entering into any room in which persons work.

2. The floors of every room containing a bath shall be rendered smooth and impervious to water, maintained in a sound condition, and frequently washed down.

3. The occupier shall provide and maintain in good condition : (*a*) for the use of all persons employed, aprons with bibs ; and (*b*) for the use of those working at a bath, rubber boots and loose-fitting rubber gloves of suitable length. The aprons and bibs shall be of sufficient length and suitable material, which in the case of persons working at a bath shall be rubber or leather.

4. The occupier shall provide and maintain for the use of all persons employed suitable accommodation for the storage and adequate arrangements for the drying of the protective clothing required under Regulation 3.

5. (*a*) The occupier shall provide and maintain for the use of all persons employed suitable washing facilities, conveniently accessible and comprising a sufficient supply of clean towels, soap and warm water. Facilities so provided shall be placed under the charge of a responsible person and shall be kept clean.

(*b*) This Regulation shall also extend to persons engaged in subsequent polishing or finishing by aid of mechanical power.

6. The occupier shall make such arrangements for First Aid treatment of injuries to persons employed as will comply with the requirements laid down for factories in Section 29 (i) of the Workmen's Compensation Act, 1923, and in addition shall see that each First Aid box is provided with a sufficient supply of ointment and impermeable waterproof plaster.

7. (*a*) Every person employed shall be examined by the surgeon once in every 14 days, or at such intervals as may be specified in writing by the Chief Inspector of Factories, on a day of which due notice shall be given to all concerned.

(*b*) A Health Register containing the names of all persons employed shall be kept in a form approved by the Chief Inspector of Factories.

(*c*) No person after suspension shall be employed without written sanction from the Surgeon entered in or attached to the Health Register.

8. The occupier shall see that the official cautionary placard as to the effects of chrome on the skin is affixed in the works in such a position as to be easily read by the persons employed, and shall arrange for inspection of the hands and forearms of all persons employed to be made twice a week by a responsible person, and for a record of such inspections to be kept in the Health Register.

Testing Exhaust Apparatus

Dealing with a few practical points arising out of the Regulations, Dr. Overton stressed the importance of regularly testing the exhaust apparatus to ensure that it is working effectively, and especially in relation to the parts of the bath farthest from the fan. Often there was not sufficient inlet of air to feed the fans, and for efficient working the inlet should be three times the amount to be extracted. Smoking was a danger because of the risk of the persons touching his face with chromic acid hands. A mixture of three parts vaseline and one part lanoline should be rubbed in the nostrils as a preventative, whilst this mixture should also be rubbed on the hands before commencing, and after finishing, work. If one could be sure of maintaining an uncracked skin, then there would be little or no danger, but unfortunately there were always some slight abrasions or cracks, and once the acid got in the trouble was caused.

In the course of the discussion which followed, a number of points were raised. Objection was taken to the 14-day medical inspection on the ground that it was too frequent. It was suggested that where a large number of men were employed the inconvenience might not be serious owing to the fact that the doctor could attend the works, but where there were only a few men it might mean that they would have to attend the doctor's surgery, and that meant considerable loss of time either to the men or their employers. If men had been examined and found not to be suffering, after a considerable time, it was suggested that the 14-days' period could be considerably extended. It was also suggested that leather aprons would be no good for men working at the chromic acid baths. Another point was that it should be unnecessary to examine the polishers very frequently, because they did not come into contact with the chromic acid. One speaker pointed out that no mention was made of women and young persons of either sex in the regulations, and expressed the view that they should be excluded from chromium plating.

Use of Oil in Bath

Dr. Overton said it had not been found that women and young children were affected more than adults. She disagreed with another speaker who claimed that it is the spray and not the fumes that is dangerous. She added that she had heard of the use of oil on the surface of the plating baths as being effective in preventing spray, and asked for information on the point.

The use of oil was condemned by one speaker on the ground that it had an influence on the bath and also on the quality of the work.

Answering further points raised in the discussion, Dr. Overton said that, according to the Chief Engineering Inspector

of Factories, a speed of 1,600 ft. per minute was considered a satisfactory velocity across the surface of the bath to remove fume and spray. As regards a suggestion that de-wirers and persons working in other rooms were not liable to be attacked, Dr. Overton said she had found cases of this kind and they had been reported, yet the persons were not working in the plating room.

One speaker asked how the regulations affected chromium plating tanks operated in the open air, which, he contended, was the best way. Dr. Overton said there would be no exemption for such plants, and that she had not seen one yet.

A cordial vote of thanks was passed to Dr. Overton at the conclusion of the discussion, and she promised that consideration should be given to the points raised.

Chemical Matters in Parliament

The Dyestuffs Act

DR. DAVIES (House of Commons, July 23), asked the President of the Board of Trade if he had received a copy of a resolution passed by the Blackburn and District Incorporated Chamber of Commerce that the Dyestuffs (Import Regulation) Act was prejudicial to the interests of the textile industries, and should be allowed to lapse when the period of its operation expired; and if he had come to any decision upon this matter.

The Parliamentary Secretary to the Board of Trade (Mr. W. R. Smith): The answer to the first part of the question is in the affirmative. The question as to what action, if any, shall be taken with regard to the Dyestuffs (Import Regulation) Act is still under consideration and a statement will be made as soon as possible.

Dr. Davies: Will the hon. Member bear in mind that this is causing a certain amount of anxiety among these people, and will he see that they are put out of their misery as soon as possible?

Sir H. Samuel: May I ask whether any answer will be given on this point before the House rises?

Mr. Smith: I think so.

Mr. Harris: Is not this an example of the way in which Safeguarding may affect other industries?

Low Temperature Carbonisation Companies

Mr. Thorne (House of Commons, July 24) asked the President of the Board of Trade whether any of the low temperature carbonisation and hydrogenation companies had published balance-sheets showing whether any of the undertakings had proved profitable.

Mr. Shinwell: I understand that some 10 or 11 companies engaged in working low temperature carbonisation processes on a commercial or semi-commercial scale have issued accounts, but so far as I am aware none of these has paid a dividend on ordinary share capital. I would, however, remind my hon. friend that it is only in recent times that these processes have begun to be worked on a commercial scale. In regard to hydrogenation no company, so far as I am aware, is yet working this process on a commercial scale.

Greenwich Lamp Black Factory

Replying to Mr. Palmer (House of Commons, July 24), who declared that cottage tenants in Blackwall Lane, Greenwich, were smothered with lamp black from the lamp black factory, the Minister of Health (Mr. A. Greenwood) stated that proceedings had been taken by the borough council for the abatement of the nuisance. The statutory defence was successfully pleaded by the company that they had adopted the best practicable means for abating the nuisance, but he was informed that other means were now being tried by the company and might have better results.

Dead Sea Salts (Concession)

In reply to Mr. Tillett, in the House of Commons on July 16, the Foreign Secretary (Mr. A. Henderson) stated that the Government was prepared, under certain conditions, to submit the question of the Dead Sea Salts Concession to arbitration, as requested by the French Government. A further question as to the nature of the conditions drew no reply.

Imperial Chemicals and Merging Co.'s

Price to be Paid for Castner-Kellner Shares

IN the Chancery Division on July 25, Mr. Justice Eve fixed the price at which certain dissentient shareholders in Castner-Kellner Alkali Co., Ltd., should be required to sell their shares in the absorption of the company by Brunner, Mond and Co., Ltd., and the subsequent merger of Brunner Mond in the Imperial Chemical Industries, Ltd.

The Brunner Mond Company in January, 1920, offered to purchase the Castner-Kellner shares on the footing that the holders would receive two £1 ordinary shares of Brunner Mond for every £1 share of the Castner-Kellner shares, and the scheme was accepted within a short time by the holders of upwards of 75 per cent. of the shares. Subsequently all except 703 shares, owned by 22 persons, were owned by the purchasing company and some of the members not assenting were now no longer known or had died.

On December 7, 1926, Imperial Chemical Industries, Ltd., was formed to take over Brunner Mond and Co., and other companies, and the terms of the merger were that three fully paid £1 ordinary shares and two fully paid 10s. deferred shares of the Imperial Company should be given for every two £1 ordinary shares of Brunner Mond. The outstanding shareholders of Castner-Kellner were offered three £1 ordinary shares and two 10s. deferred shares in the Imperial Company in respect of every £1 share in Castner-Kellner.

Mr. Gordon Brown, who appeared with Mr. Lionel Cohen, K.C., for Brunner Mond and Co., said at the date of the offer by that company they owned 252,000 of the Castner-Killner shares, so that the offer was made to the holders of the remaining 748,000 of the £1,000,000 issued shares.

The Judgment

His lordship, in giving his decision, said at the hearing of the petition the proposal of the petitioners was varied by substituting for three ordinary and two deferred shares in the Imperial Company a cash payment, calculated on the market value of the Imperial Company's shares at the date of the order. Objection was taken by the dissentients that the offer made by the petitioners was not the scheme or contract approved before the passing of the Act of 1929. There was much to be said in support of that contention. The original scheme was an offer by the Brunner Mond Company conditional on its being accepted within six weeks by the holders of 75 per cent. of the shares in Castner-Kellner. The offer was accepted by 75 per cent. before the end of 1922. His Lordship then referred to the incorporation of the Imperial Company and the offer on its part to acquire the Castner-Kellner shares and said the dissentients pointed out that the market value of the five Imperial Company's shares was less than the value of the two Brunner Mond shares, that the Brunner Mond Company was still in existence, and that there was nothing to prevent the issue of its own shares. His Lordship went on to say that he did not propose to adopt the offer made by the petitioners. He had not sufficient knowledge of the circumstances under which the exchange of Brunner Mond shares was brought about or what it involved, and he thought the objection to accept shares of what he might call the subpurchasing company, or the present market value of those shares, in satisfaction of their holdings in Castner-Kellner was reasonable. Some other standard of fixing the pecuniary compensation payable must be resorted to.

There was one consideration which helped to fix the price to be paid for the shares. In the original scheme two Brunner Mond shares were to be exchanged for every £1 share in Castner- Kellner; in other words, the exchange was to be on the footing that one Castner-Kellner was double a Brunner Mond share, and it was on this footing that the shares in the former were acquired before the end of 1922. It was impossible to believe, in view of the dividends of recent years paid on Castner-Kellner shares, which rose to 66 per cent., that they were of less value to-day than in 1922, and he was certainly not prepared to deal with dissentients on less favourable terms than those given to the majority of the shareholders. In dealing with a like case Mr Justice Clauson fixed the value of Brunner Mond shares at 55s. 6d., and in this case he (Mr. Justice Eve) proposed to double that figure and fix the price to be paid to the Castner-Kellner dissentients at £5 11s., with interest at 6 per cent. from December 31 last till payment.

From Week to Week

RUSSIAN SUPERPHOSPHATE production, from October, 1929, to March, 1930, was 155,000 tons, as against 75,000 tons in the previous corresponding period.

SOIL SCIENCE PROBLEMS are to be the subject of a conference at Rothamsted Experimental Station on September 16-18, on the occasion of the annual visit of Empire agricultural officers.

THE BICENTENARY celebrations of W. and T. Avery, Ltd., Soho Foundry, Birmingham, were continued on Saturday last, when the firm entertained some 5,700 of their workpeople at Bingley Hall.

RECENT WILLS include Mr. Marcus Salaman, of Beaumont Street, Marylebone, London, chemical manufacturer (net personalty £47,511), £47,611. Mr. Robert William de Greeff, of Bromley, Kent, founder of R. W. Greeff and Co., Ltd., chemical merchants, London, £150,618.

THE CHILEAN NITRATE PRODUCERS' ASSOCIATION of Valparaiso has incorporated two companies in England, the Chilean Nitrate Producers' Association (Overseas), Ltd., and Chilean Nitrate Producers' Association (London), Ltd. The overseas company is to act as the association's agent in general matters, while the London company will carry on nitrate business in the British Isles.

PROCTOR AND GAMBLE, the American and Canadian soap combine, have acquired a controlling interest in Thomas Hedley and Co., the largest independent soap manufacturing company in Great Britain. It is understood that it is their intention to extend the Newcastle premises of Thomas Hedley and use them as a centre of manufacture and distribution for the North of England and Scotland.

THE FARADAY SOCIETY is holding a general discussion on "Colloid Science Applied to Biology" in the Laboratory of Physical Chemistry, Cambridge, from September 29 to October 1 next. On Monday, September 29, Sir William Hardy is introducing the subject of "Equilibrium in Protein Systems," and on the following day Sir F. Gowland Hopkins will introduce the discussion on "The Structure of Living Matter." Several distinguished foreign scientists will be among those taking part.

AT THE ANNUAL MEETING of the South African Chemists' Institute, held in Johannesburg, Professor M. Rindl referred in his presidential address to the problem of finding employment for the many chemists who year by year are becoming qualified in the Union. "One is reluctantly forced to the conclusion," he said, "that the profession has practically reached saturation point." Industrially, he added, there had been little advancement in South Africa during the last decade, and although proposals which would result in many openings for members of their profession appeared to be gradually developing, the progress was slow.

GRAESSER-MONSANTO CHEMICAL WORKS, LTD., announce that Mr. John F. Queeny, who returned recently to the United States, has resigned the chairmanship of the Graesser-Monsanto Board. Mr. Queeny, who is chairman of the board of Monsanto Chemical Works, Inc., St. Louis, remains a director of Graesser-Monsanto, in which company he will continue to take an active interest. Mr. L. F. Nickell, who has been with Monsanto Chemical Works, Inc., for fourteen years in charge of their works at Monsanto, Illinois, is appointed chairman and managing director of Graesser-Monsanto Chemical Works, Ltd. Mr. T. P. Berington, secretary of the company, succeeds the late Mr. J. D. Gillis as vice-chairman.

ACCORDING to a ballot taken of the American Chemical industry the following have been chosen as the five business leaders in American chemical fields:—E. M. Allen, president of the Mathieson Alkali Works; Leo Baekeland, chairman of the Bakelite Corporation; Pierre S. Du Pont, chairman of the Du Pont companies; Herbert H. Dow, president of the Dow Chemical Co.; and George Eastman, chairman of the Eastman Kodak Co. They were nominated to receive the "Chemical Markets" Medal to be awarded for the most distinguished economic services to American chemical industries. This gold medal has been struck in commemoration of the tenth anniversary of Williams Haynes as publisher of *Chemical Markets*. The award will be made at the Chemists' Club in New York to the medallist selected from the five candidates named.

THE HARSHAW CHEMICAL CO. announce the removal of its executive and sales office to 1945 East 97th Street, Cleveland, Ohio.

DONATIONS to the Funds promoted by Castleford Urban Council and the Lord Mayor of Leeds for the relief of sufferers in the recent chemical works explosion at Castleford are now over £9,500.

UNIVERSITY NEWS: *London*—The following have been awarded the degree of Ph.D. (Chemistry): W. J. Lesley (Sir John Cass Technical Institute) and A. G. Murray (University College, Nottingham).

THE BRITISH PHARMACEUTICAL SOCIETY, at the close of the recent conference at Cardiff, presented a valuable set of text books on scientific subjects for use in a library of the chemical department of Cardiff Technical College.

THE ROYAL SOCIETY OF ARTS is holding an exhibition of designs submitted for its seventh annual open Competition of Industrial Designs at the Imperial Institute, South Kensington, from to-day until the end of the month.

MR. F. E. HAMER, editor of THE CHEMICAL AGE and a director of Benn Brothers, Ltd., has been appointed by the Lord Chancellor on the Commission of the Peace for the county of Middlesex. He was enrolled as a justice and took his seat at the Guildhall, Westminster, on Tuesday.

THE CLEAN COAL CO., LTD. has received an order from the Tinsley Park Colliery Co., Ltd., of Sheffield, for a plant to treat their coking coal by the "Clean Coal" Patent Dedusting Process. This plant will be capable of dealing with the whole requirements of the colliery's by-product coke ovens.

THE BRITISH CARBO-UNION announce that they have secured a contract from the Gas Light and Coke Co. for a benzol recovery plant (Carbo-Union process) for the Beckton gasworks. This plant will be the largest in the world, operating with active carbon. It is designed to handle 75,000,000 cu. ft. of gas per 24 hours, and will produce about 80 tons of benzol daily.

A COMMITTEE of the Privy Council, it was announced on Tuesday, has been established for agricultural research. It will consist of the Lord President of the Council (Lord Parmoor), the Minister of Agriculture and Fisheries (Dr. Addison), the Home Secretary (Mr. Clynes), the Secretary of State for Scotland (Mr. W. Adamson), and the President of the Board of Education (Sir Charles Trevelyan).

THE ANNUAL CONFERENCE of the National Smoke Abatement Society will be held at Leicester on September 26, 27, and 28, when an interesting programme will include a paper on "Fuel Research and Smoke Abatement," by Dr. Margaret Fishenden, the expert on smokeless fuels and methods of heating, and discussion on the report of the Sheffield Manufacturers' Smoke Abatement Research Committee.

DR. FREDERICK CHALLENGER, who for the past ten years has been senior lecturer in chemistry at the University of Manchester, has been appointed to the chair of organic chemistry in the University of Leeds. He has done considerable research work in connection with aromatic organometallic and metalloidal compounds, including the orienting influence of the inorganic group, the sulphur compounds of shale oil, and the mechanism of mould fermentations.

MR. ROBERT TATLOCK, of Glasgow, who was appointed Public Analyst for the city in 1874, and who later combined this duty with that of Sewage Chemist, was the subject of an appreciative article last week in the *Glasgow Evening News*. While holding the position of Public Analyst, Mr. Tatlock had many strange experiences, especially in murder cases, and before the trial of Dr. Pritchard, the poisoner, who was later hanged, he had to analyse over a hundred specimens. Among his assistants have been Sir William Ramsay, Lord Overton, Mr. George MacRoberts, manager of Nobel's Ardeer Works, and Sir Robert Robertson.

Obituary

MR. WILLIAM BROWNING, retired manufacturing chemist, Bellevue, Crail, aged 64.

MR. HARRY THORNLEY, eldest son of Mr. Thomas Thornley, managing director of Cross and Co., Ltd., chemical manufacturers, Falkirk and Glasgow. Mr. Thornley was in the employ of his father's firm at Camelon.

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Accepted Specifications

329,883. FERTILISERS. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, July 1, 1929.

Potassium carbamate or mixtures containing it is treated with an acid salt, or acid. The product is neutralised with ammonia. Thus potassium carbamate may be treated with concentrated nitric acid to obtain a dry mixture of ammonium nitrate and potassium nitrate. Alternatively, potassium carbamate may be treated with sulphuric acid and ammonium sulphate or ammonium bi-sulphate, with a mixture of phosphoric and nitric acids, or with a mixture of phosphoric acid, nitric acid and ammonium nitrate.

319,888. ORGANIC IODO COMPOUNDS. Union Chimique Belge, Soc. Anon., 61, Avenue Louise, Brussels. International Convention date, June 7, 1929.

o-Oxy-quinoline-ana-sulphonic acid or its alkali salt is treated with hydrogen peroxide and hydriodic acid, or alkali or alkaline earth metal iodides in the presence of sulphuric acid to obtain iodo-*o*-oxy-quinoline-ana-sulphonic acid.

329,896. HYPOCHLORITES. Mathieson Alkali Works, 250, Park Avenue, New York. Assignees of R. B. Macmullin and M. C. Taylor, Niagara Falls, N.Y., U.S.A. International Convention date, December 29, 1928.

A chlorinated lime solution containing calcium hypochlorite and calcium chloride is mixed with sodium chloride preferably at —10° C. to obtain the triple salt $Ca(OCl)_2.NaOCl.NaCl.12H_2O$. During chlorination the solution is kept free of precipitated calcium hypochlorite di-hydrate by keeping the temperature below 10° C., or cooling below 10° C. before precipitation begins, or by chlorinating only to such a point that addition of sodium chloride does not cause precipitation, adding sodium chloride and fresh lime, and completing the chlorination at 0° C. The triple salt is stable below 22° C., but may be converted into a stable mixture of calcium hypochloride and calcium chloride, as described in Specification 317,437 (see THE CHEMICAL AGE, Vol. XXI, p. 362).

329,939. TREATING PHOSPHATES. Chemieverfahren-Ges., 15, Wilhelmstrasse, Bochum, Germany. International Convention date, November 28, 1928.

Crude phosphate is treated with nitric acid and potassium sulphate and the resulting calcium sulphate removed. The solution is then treated with magnesium carbonate, hydroxide or oxide, to precipitate the bulk of the phosphate as crystalline di-magnesium phosphate. The remaining solution containing 1 per cent. phosphorus pentoxide is treated with magnesium carbonate to precipitate trimagnesium phosphate, which may afterwards be used to precipitate di-magnesium phosphate, while potassium nitrate is obtained by evaporating the solution.

329,959. CRACKING HYDROCARBONS. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, February 22, 1929.

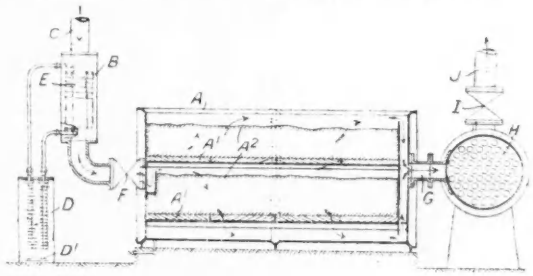
Tars, mineral oils, etc., are subjected to successive restricted crackings with or without catalysts so that the fractions cracked have boiling points below 200° C., at least one stage being carried out at a pressure of at least 50 atmospheres. Catalysts immune from sulphur poisoning may be employed, and hydrating catalysts may be used in the first stages. The restricted cracking may be effected by using lower temperatures, shorter reaction times, and less active catalysts than in normal cracking. In an example, the petroleum distillate boiling mainly at 300°-350° C. is cracked at 420°-430° C. at 50 atmospheres pressure to obtain a product containing 70-80 per cent. of constituents boiling up to 325° C. The fraction boiling at 225°-325° C. is again cracked under the same conditions to obtain a product containing 65-75 per cent. of a fraction boiling between 180°-250° C. This is mixed with a fraction from the first cracking boiling below 225° C. and again cracked at 460° C. and 80 atmospheres with a catalyst containing 66 per cent. molybdic acid and 33 per cent. zinc oxide to obtain a non-knocking motor fuel containing 60 per cent. of benzines.

329,960. DYES. I.G. Farbenindustrie Akt.-Ges., E. Hoffa, 4, Hostatostrasse, and E. Thoma, 61, Königsteinerstrasse, all in Frankfort-on-Main, Germany. Application date, February 25, 1929. Addition to 286,274.

Specification No. 286,274 (see THE CHEMICAL AGE, Vol. XVIII, p. 440) describes a process in which 4-amino-diphenylamines are diazotised and coupled with 2 : 3-oxy-naphthoyl-aryl-amines to form insoluble azo dyestuffs. In this invention, the process is extended to the use of bases of the general formula R_2-NH-R_1-NH_2(*p*), where R_1 is an aromatic residue which may be substituted, and R_2 is an isocyclic residue which may be substituted. Examples are given of the formation on the fibre of the dyestuffs 4-amino-phenyl-β-naphthylamine →2 : 3-oxynaphthoic acid anilide, 4-aminophenyl-2-carboxylic acid methyl ester-β-naphthylamine→2 : 3-oxynaphthoic acid-4^1-chloro-1^1-anilide, 4-amino-3-chloro (or 3 : 5-dichloro-) phenyl-β-naphthylamine→the 4-chloro-anilide, 4-amino-4^1-phenoxy-diphenylamine→the *o*-toluidide, 4^1-methoxy-2-carboxylic acid methylester-4-amino-diphenylamine→the 5-chloro-2-toluidide, and 4-amino-diphenylamine-2-carboxylic acid methylester (or 4-amino-phenyl-cyclohexylamine)→the *o*-anisidide. The shades obtained with a number of additional components are also given. Examples are also given of the manufacture of the above diaryl-amines and a number of others.

329,973. REMOVING SULPHUR FROM GASES. Premix Gas Plants, Ltd., and A. Docking, York Mansion, Petty France, Westminster. Application date, January 25, 1929.

Producer gas, after passing through the washers and scrubbers, is reheated to 90°—120° F. and purified by contact with



329,973

iron oxide or ferric hydrate. The gas is passed through a heater B where its temperature is raised to 90° F. by a steam coil E fed from a boiler D. The gas then passes through a regulating valve F to a purifier A containing iron oxide or ferric hydrate A^2 on trays A^1, and finally through pipe G to a tubular condenser H, where moisture is removed and the temperature reduced to normal. Moisture must be added to the purifier to replace that removed by the gas.

329,961. DYES. Imperial Chemical Industries, Millbank, London, and R. Brightman, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, February 25, 1929.

Azo dyes for regenerated celluloses are obtained by coupling diazotised-*m*-nitraniline or a non-hydroxylated derivative with a phenol or naphthol or a sulphonic or carboxylic derivative, or with an N-aryl-substituted amino-naphthol sulphonic acid, reducing the nitro azo dyestuff obtained, diazotising and coupling in alkaline solution with a *m*-diamine of the benzene series, or with 2 : 5- and 2 : 8-aryl- or aroyl-amino-naphthol sulphonic acids or with 1 : 8-amino-naphthol sulphonic acids or 1 : 5-amino-naphthol-7-sulphonic acid. As an alternative, a diazotised *m*-amino-acetanilide or a non-hydroxylated

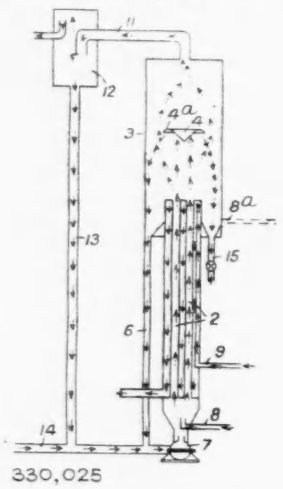
derivative is coupled with the first coupling components, the acylamino azo compound hydrolysed, diazotised and coupled with the second coupling components. Examples are given of the dyestuffs *m*-nitraniline→salicylic acid (reduced)→N-phenyl-J-acid (or N-phenyl-2 : 8 : 6-acid) and 4-nitro-2-anisidine→N-phenyl-2 : 8 : 6-acid (reduced)→H-acid. These dyestuffs give yellow or red to violet or blue shades on viscose, and particulars are also given of the shades with a number of additional components.

329,987. Organo Mercury Compounds. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, February 26, 1929.

Hydrocarbon mercury hydroxides are obtained by double decomposition of the halides or acetates with caustic alkali in alcoholic or aqueous solution, and are then treated with a phenol or derivative, or a mercapto compound to obtain grain immunising media. Phenyl mercury hydroxide may be treated with salicylic acid, α-and-β-hydroxynaphthoic acids, *p*-hydroxybenzoic acid, gallic acid, *o*-chlorophenol, *m*-hydroxy-benzaldehyde, *p*-cresol, naphthols, isothymol, thiosalicylic acid, *p*-thiocresol, thiophenol, thioglycollic acid, and mercapto-benzothiazole.

330,025. Destructive Hydrogenation and Cracking of Hydrocarbons. T. G. Hunter, Norton Hall, The Green, Norton-on-Tees, and Imperial Chemical Industries, Millbank, London. Application date, March 16, 1929.

Oil or suspensions of coal in oils is passed by pipe 14 ot pump 7 and is thus forced upwards through tubes 2 by



330,025

hydrogen or other gas supplied through pipe 8. The material is projected against a baffle plate having a concave base 4a and a central conical part 4, so that the material falls in a parabolic sheet to the outlet pipe 6, which returns it to the pipe 14. Hot gases are supplied by pipe 9 at the same pressure as the hydrogen, to heat the tubes 2, and hydrogen is supplied through pipe 8a at 1—300 atmospheres pressure, and passes through the descending sheet of material. Gaseous products pass out through pipe 11 and any separated liquid is returned through pipe 13. The catalyst may be finely divided ferric oxide, and the tubes may be constructed of mild steel with an iron sheath, or of nickel-, chromium-, or molybdenum-steel. A temperature of 400°—500° C. may be employed.

330,011. Wood Ethers, Chlorine Dioxide. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, Mar. 5, 1929.

Wood ethers which are only partly soluble in alcohols, alcohol-benzene mixtures, acetone, chlorinated hydrocarbons, are rendered completley soluble in these by treating with chlorine dioxide in an acid or neutral medium. The treatment is preferably effected in the presence of a salt of a strong base with a weak acid, *e.g.*, calcium carbonate, sodium acetate or borate, to keep the P_H of the solution constant between $P_H 4$—7. The chlorine dioxide may be added in solution or prepared in presence of the wood ether, *e.g.*, by reducing chloric acid with vanadium or titanium salts, or electrolytically. In an example, a mixture of pine wood sawdust and 50 per cent. caustic soda lye is treated under pressure with ethyl chloride, which is then distilled off. The product is disintegrated, washed with water, and treated with a 1 per cent. aqueous solution of chlorine dioxide. The solution is filtered and the wood ether washed with water till neutral and dried. Alternatively, calcium carbonate may be present during the chlorine dioxide treatment to neutralise the hydrochloric acid evolved, the excess of calcium carbonate is removed by hydrochloric acid, and the wood ether washed and dried. Other modifications of the process are described.

330,026. Acetic Acid. Soc. Anon. des Distilleries Deux-Sèvres, Melle, Deux-Sèvres, France. International Convention date, January 25, 1929.

Crude pyroligneous acid or its vapour is treated with solvents such as acetic esters, aliphatic ketones such as mesityl oxide and butyrone, cyclic ketones such as cyclo-hexanone and methyl cyclo-hexanone, or mixtures of these. The quantity of solvent necessary for the removal of tar is first used, and the purified acid is then treated with sufficient of the same solvent to extract the acetic acid. The solvent is chosen so that the proportion of solvent for the second treatment is 2—16 times that required for the first treatment.

330,045.—Refining Benzol. Soc. du Gaz de Paris, 6, Rue Condorcet, Paris. International Convention date, November 29, 1928. Addition to 307,935 and 314,052.

The vapours of the 65—120° C. fraction are passed against a continuous or intermittent flow of dilute sulphuric acid over refractory material, then condensed, and then washed with water, dilute alkaline lye, and water, and then fractionally distilled. The first fractions containing the ethylenic hydrocarbons are rejected, and 90 per cent. benzol is obtained.

330,146. Borax. American Potash and Chemical Corporation, 6th Street, Trona, Cal., U.S.A. International Convention date, March 11, 1929.

Hydrated borax is passed successively through chambers through which a current of air is passing, at successively higher temperatures and successively lower humidity. The temperature may vary from 50° C. to 325° C. and the humidity from 0·1 lb. water per lb. of air to zero. The temperature is below that at which borax dissolves in its water of crystallisation, and a dense product containing 8—21 per cent. water and having an apparent specific gravity of 0·5—0·9 is obtained.

Note.—Abstracts of the following specifications which are now accepted appeared in The Chemical Age when they became open to inspection under the International Convention :—308,662 (Schering-Kahlbaum Akt.-Ges.), relating to manufacture of alkylated phenols, see Vol. XX, p. 524 ; 309,031 (Rheinische Kampfer-Fabrik Ges.), relating to preparation of thymol, see Vol. XX, p. 547 ; 310,011 (Soc. of Chemical Industry in Basle), relating to manufacture of dyestuffs, see Vol. XX, p. 620 ; 311,347 (I.G. Farbenindustrie Akt.-Ges.), relating to vat dyestuffs of the anthanthrone series, see Vol. XXI, p. 34 ; 312,175 (I.G. Farbenindustrie Akt.-Ges.), relating to acid wool dyestuffs, see Vol. XXI, p. 90 ; 313,887 (I.G. Farbenindustrie Akt.-Ges.), relating to vat dyestuffs, see Vol. XXI, p. 178 ; 315,356 (I.G. Farbenindustrie Akt.-Ges.), relating to polymerising hydrocarbons of the butadiene series, see Vol. XXI, p. 244.

Specifications Accepted with Date of Application

303,894. Non-knocking engine fuels of the benzine type, Manufacture of. I.G. Farbenindustrie Akt.-Ges. January 13, 1928.

307,798. Amines from organic acids and their anhydrides, Production of. Knoll Akt.-Ges. Chemische Fabriken and K. F. Schmidt. March 13, 1928.

309,605. Electrolysis of molten substances, Process and apparatus for. I.G. Farbenindustrie Akt.-Ges. April 14, 1928.

309,610. Water-soluble derivatives of aromatic diazo compounds, Manufacture of. I.G. Farbenindustrie Akt.-Ges. April 14, 1928.

309,911. Cyclohexene aldehydes and cyclohexene carboxylic acids, which contain at least one dialkylated ring carbon atom. Production of. Soc. Anon. M. Naef et Cie. April 17, 1928.

313,919. Rubber derivatives, Manufacture of. I.G. Farbenindustrie Akt.-Ges. June 19, 1929.

314,944. Manufacturing nickel in a finely divided state, in particular for the catalytic manufacture of hydrogen from a mixture of methane and water vapour. Naamlooze Vennootschap de Bataafsche Petroleum Maatschappij. July 5, 1928.
331,816. Hydrocarbons of low boiling point from those of higher boiling point, Production of. H. W. Strong and Imperial Chemical Industries, Ltd. April 2, 1929.
331,838. Lining vessels for carrying out operations with liquids and the like. Imperial Chemical Industries, Ltd., and F. H. Bramwell. January 9, 1929.
331,878. Barium monoxide, Production of. G. T. Shine. February 11, 1929.
331,839. Azo dyes, Manufacture of. Imperial Chemical Industries, Ltd., R. Brightman, and W. L. B. Wellacott. March 5, 1929.
331,879. Low temperature distillation, drying, and the like, Apparatus for. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) February 11, 1929.
331,817. Destructive hydrogenation of coal, oils, and the like. C. F. R. Harrison, and Imperial Chemical Industries, Ltd. April 2, 1929.
331,842. Vat dyestuffs, Manufacture of compounds from. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) March 9, 1929.
331,869. Organo metallic compounds, Preparation of. H. J. Barber, and May and Baker, Ltd. March 8, 1929.
331,883. Aldehydes from alcohols, Production of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) April 11, 1929.
331,885. Acceleration of vulcanisation. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) April 11, 1929.
331,886. Purified zinc sulphate solutions, Manufacture of. Soc. Minière and Metallurgique de Penarroya. January 30, 1929.
331,892. Metals and alloys, Production of—by exothermic reduction. W. B. Hamilton and T. A. Evans. February 5, 1929.
331,916. Destructive hydrogenation and cracking processes, Recovery of the products of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) April 11, 1929.
331,922. Potassium salt of the acid sulphuric acid esters of α and β diacetone fructose, Production of. H. Ohle. April 12, 1929.
331,947. Imino ethers, Production of. K. F. Schmidt and P. Zutavern. April 19, 1929.
331,952. Dyestuffs of the anthraquinone series, Manufacture of. Imperial Chemical Industries, Ltd., A. Shepherdson and W. W. Tatum. April 22, 1929.
332,057. Acetylene and hydrogen from hydrocarbons or gas mixtures containing the same, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) July 12, 1929.
332,106. Mercury, Recovery of. R. Riley, S. W. Rowell, and Imperial Chemical Industries, Ltd. August 21, 1929.
332,122. Naphthalene-2:3-dicarboxylic acid, Manufacture of. W. W. Groves. (*I.G. Farbenindustrie Akt.-Ges.*) September 10, 1929.
332,147. Sulphur from fuel gases, Removal of. S. G. Watson, D. M. Henshaw and W. C. Holmes and Co. Ltd. October 15, 1929.

Applications for Patents

[In the case of applications for patents under the International Convention, the priority date (that is, the original application date abroad which the applicant desires shall be accorded to the patent) is given in brackets, with the name of the country of origin. Specifications of such applications are open to inspection at the Patent Office on the anniversary of the date given in brackets, whether or not they have been accepted.]

British Cyanides Co., Ltd. Manufacture of moulding materials. 22,219. July 23.
Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of derivatives of 3-nitro-4-hydroxy-benzamide. 22,138. July 22.
Coles, S. O. Cowper-. Chromium plating. 21,928. July 21.
—— Case hardening, etc., iron and steel surfaces. 21,929. July 21.
Coley, H. E. Production of hydrocarbons. 22,073. July 22.
Fucher, O. Production of higher alcohols. 22,588. July 26.
Greiner, H., and Kœnigs, E. Manufacture of pyridine derivatives. 22,220. July 23. (Germany, July 23, 1929.)
I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Manufacture of filters for rubber industry. 21,995. July 21.
—— Gas producers. 21,996. July 21.
—— Manufacture of soap preparations. 21,997. July 21.
—— Manufacture of wetting, etc., agents. 21,998. July 21.
—— Manufacture of halogen anthraquinone-β.α-(N)-benzacridones. 22,258. July 23.
—— Manufacture of halogen derivatives of anthraquinonebenzacridone series. 22,259. July 23.
—— Valves for rendering vessels gas-tight. 22,375. July 24.
—— Manufacture of cyanates. 22,481. July 25.
—— Production of hydrocarbons. 22,482. July 25.
—— Introduction, etc., of solid substances into high-pressure vessels. 22,483. July 25.
—— Carrying out reactions in presence of hydrogen. 22,484. July 25.
—— Production of hydroxylated ethers. 22,485. July 25.
—— Production of alcohols. 22,486. July 25.
—— Electro-filters. 22,575. July 26.
—— Apparatus for continuous cracking of mineral oils, etc. 22,576. July 26.
I.G. Farbenindustrie Akt.-Ges. Manufacture of cellulose esters. 21,989. July 21. (Germany, July 19, 1929.)
—— Manufacture of emulsions of waxes. 21,990. July 21. (Germany, July 19, 1929.)
—— Manufacture of acetic anhydride. 22,011. July 21. (Germany, August 1, 1929.)
—— Manufacture of vat dyestuffs. 22,139. July 22. (Germany, July 30, 1929.)
—— Lining-compositions for moulds for magnesium, etc. 22,383. July 24. (Germany, August 10, 1929.)
—— Production of phosphorus and alumina. 22,601. July 26. (Germany, August 31, 1929.)
Imperial Chemical Industries, Ltd. Separating substances from a single phase. 22,170. July 23.
—— Finishing textiles. 22,206. July 23.
—— Cellulose derivatives. 22,262. July 23.
Imperial Chemical Industries, Ltd., and Kitchen, F. N. Manufacture of calcium hypochlorite. 22,305. July 24.
—— Liquid fuels. 22,333. July 24. (United States, July 25, 1929).
—— Manufacture of rubber, etc. 22,514. July 25. (United States, July 25, 1929.)
—— Purification of complex compounds containing phosphorus and tungsten. 22,515. July 25. (United States, July 25, 1929.)
Imperial Chemical Industries, Ltd., and Du Pont de Nemours and Co. Manufacture of vulcanised rubber, etc. 22,334. July 24.
Kaufmann, A. A. Separation of alcohols and phenols from mixtures. 22,393. July 24. (Germany, August 7, 1929.)
Kekwick, L. O. Production of hydrocarbons. 22,073. July 22.
Soc. de Recherches et d'Exploitation Pétrolifères. Activation of carbonaceous materials. 22,342. July 24. (France, September 9, 1929.)

Oxy-Acetylene Welding in the Empire

Report to International Congress

A COMPREHENSIVE report on technical training, applications in industry and the general progress of the oxy-acetylene welding and metal processes in the British Empire was presented by the British Acetylene Association at the International Acetylene Congress held at Zurich from July 9 to 12. The report covers the progress made since 1920 in all the British Dominions where the oxy-acetylene processes of welding and metal cutting are in extensive use. As regards Great Britain it is stated that, as a craftsman, the British welder has nothing to fear in comparison with his fellow craftsman in any part of the world. There is no doubt that many improvements can be made, notably in the provision of external boards of examiners for every welding school or class, by the encouragement of increased establishment of schools and classes and the enlargement of some where there is, each session, a waiting list of students. These problems are receiving close attention from the British technical associations principally concerned with the welding industry.

"If progress in Great Britain has not been so swift as it has been elsewhere," concludes the Report, "it has at least been made—to use a welding simile—with autogenous fusion at the bottom of the vee, and with each additional layer properly welded, alike to parent metal and the new material beneath it. Eliminating the slag of hasty experiment, and the blow-holes of inadequate research, we have built up a structure cleansed and protected by the flux of a fine operative technique, for the work of the trained British welder demands the admiration of the metallurgical experts of every industrial nation.

"It is upon this solid foundation that we are building and shall continue to build, and though to assert that the oxy-acetylene processes, in the countries covered by our Report, are used to the fullest possible extent, would be untrue—and, indeed, from the viewpoint of those whose interests lie in the expansion of the industry, very fortunately untrue—this at least we can say, that no large section of British industry has failed to obtain direct benefits from the use of the blowpipe, or to appreciate more fully, year by year, the additional and profitable applications which have been found for it. Finally, British manufacturers of oxy-acetylene equipment, by maintaining and improving the high quality of plant and materials and the comprehensive character of their service, and by helping in every way the training of welders in co-operation with educational authorities, are doing all in their power to encourage the use of the processes, and so to help both the British Empire's industry and the oxy-acetylene trade in every part of the world."

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID, CHROMIC.—1s. 0¾d. per lb. d/d U.K.

ACID HYDROCHLORIC.—Spot, 3s. 9d. to 6s. per carboy d/d, according to purity, strength and locality.

ACID NITRIC, 80° Tw.—Spot £20 to £25 per ton, makers' works according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA (ANHYDROUS).—Spot, 11d. per lb., d/d in cylinders.

AMMONIUM BICHROMATE.—8d. per lb. d/d U.K.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.

BLEACHING POWDER, 35/37%.—Spot, £7 10s. per ton d/d station in casks, special terms for contracts.

BORAX, COMMERCIAL.—Crystals, £13 10s. per ton; granulated, £12 10s. per ton; powder, £14 per ton. (Packed in 1 cwt. bags carriage paid any station in Great Britain. Prices quoted are for one ton lots and upwards).

CALCIUM CHLORIDE (SOLID), 70/75%.—Spot, £4 15s. to £5 5s. per ton d/d in drums.

CHROMIUM OXIDE.—9½d. and 10d. per lb. according to quantity d/d U.K.

CHROMETAN.—Crystals, 3¼d. per lb. Liquor, £18 10s. per ton d/d U.K.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 7d. to 1s. 11d. per gall. pyridinised industrial, 1s. 9d. to 2s. 1d. per gall.; mineralised 2s. 8d. to 2s. 11d. per gall. 64 O.P., 1d. extra in all cases. Prices according to quantity.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE CRYSTALS AND GRANULAR.—4½d. per lb. nett d/d U.K., discount according to quantity; ground ½d. per lb. extra.

POTASSIUM CHLORATE.—3¾d. per lb., ex-wharf, London, in cwt. kegs.

POTASSIUM CHROMATE.—8d. per lb. d/d U.K.

SALAMMONIAC.—Firsts lump, spot, £42 10s. per ton d/d station in barrels. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE, UNGROUND.—Spot, £3 7s. 6d. per ton d/d station in bulk.

SODA ASH, 58° E.—Spot, £6 per ton, f.o.r. in bags, special terms for contracts.

SODA CAUSTIC, SOLID, 76/77°E.—Spot, £14 10s. per ton, d/d station.

SODA CRYSTALS.—Spot, £5 to £5 5s. per ton, d/d station or ex depot in 2 cwt. bags.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE, REFINED.—Spot, £10 10s. per ton d/d station in bags.

SODIUM BICHROMATE CRYSTALS.—3¼d. per lb. nett d/d U.K., discount according to quantity. Anhydrous ¾d. per lb. extra.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.b. London.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM CHROMATE.—3¼d. per lb. d/d U.K.

SODIUM NITRITE.—Spot, £19 per ton, d/d station in drums.

SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.

SODIUM SILICATE, 140° Tw.—Spot, £8 5s. per ton, d/d station returnable drums.

SODIUM SULPHATE (GLAUBER SALTS).—Spot, £4 2s. 6d. per ton, d/d address in bags.

SODIUM SULPHIDE SOLID, 60/62%.—Spot, £10 5s. per ton d/d station in drums. Crystals—Spot, £7 10s. per ton d/d station in returnable casks.

SODIUM SULPHITE, PEA CRYSTALS.—Spot, £13 10s. per ton, d/d station in kegs. Commercial—Spot, £9 per ton, d/d station in bags.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—7d. to 7½d. per lb. Crude 60's 1s. 11d. to 2s. 1d. per gall. July/December.

ACID CRESYLIC 99/100.—2s. 2d. to 2s. 4d. per gall. B.P., 5s. per gall. 97/99.—2s. 1d. to 2s. 2d. per gall. Refined, 2s. 7d. to 2s. 10d. per gall. Pale, 95%, 1s. 9d. to 1s. 10d. per gall. 98%, 1s. 11d. to 2s. Dark, 1s. 6d. to 1s. 7½d.

ANTHRACENE.—A quality, 2d. to 2½d. per unit. 40%, £4 10s. per ton.

ANTHRACENE OIL, STRAINED, 1080/1090.—4¾d. to 5½d. per gall. 1100, 5½d. to 6d. per gall.; 1110, 6d. to 6½d. per gall. Unstrained (Prices only nominal).

BENZOLE.—Prices at works: Crude, 10d. to 11d. per gall.; Standard Motor, 1s. 5d. to 1s. 6d. per gall.; 90%, 1s. 7d. to 1s. 8d. per gall.; Pure, 1s. 10d. to 1s. 11d. per gall.

TOLUOLE.—90%, 1s. 9d. to 1s. 11d. per gall. Pure, 1s. 11d. to 2s. 3d. per gall

XYLOL.—1s. 5d. to 1s. 10d. per gall. Pure, 1s. 8d. to 2s. 1d. per gall

CREOSOTE.—Cresylic, 20/24%, 6¾d. to 7d. per gall.; Heavy, for Export, 6¼d. to 6⅝d. per gall. Home, 4d. per gall. d/d. Middle oil, 4¼d. to 5d. per gall. Standard specification, 3d. to 4d. per gall. Light gravity, 1½d. to 1⅝d. per gall. ex works. Salty, 7½d. per gall.

NAPHTHA.—Crude, 8¼d. to 8⅜d. per gall. Solvent, 90/160, 1s. 3d. to 1s. 3½d. per gall. Solvent, 95/160, 1s. 4d. to 1s. 6d. per gall. Solvent 90/190, 1s. to 1s. 2½d. per gall.

NAPHTHALENE, CRUDE.—Drained Creosote Salts, £4 10s. to £5 per ton. Whizzed, £4 10s. per ton. Hot pressed, £8 per ton.

NAPHTHALENE.—Crystals, £12 5s. per ton. Purified Crystals, £14 10s. per ton. Flaked, £14 to £15 per ton.

PITCH.—Medium soft, 46s. to 47s. 6d. per ton, f.o.b., according to district. Nominal.

PYRIDINE.—90/140, 3s. 9d. to 4s. per gall. 90/160, 3s. 6d. to 3s. 9d. per gall. 90/180, 1s. 9d. to 2s. 3d. per gall. Heavy prices only nominal.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100%.

ACID GAMMA.—Spot, 3s. 9d. per lb. 100% d/d buyer's works.

ACID H.—Spot, 2s. 3d. per lb. 100% d/d buyer's works.

ACID NAPHTHIONIC.—1s. 5d. per lb. 100% d/d buyer's works.

ACID NEVILLE AND WINTHER.—Spot, 2s. 7d. per lb. 100% d/d buyer's works.

ACID SULPHANILIC.—Spot, 8½d. per lb. 100% d/d buyer's works.

ANILINE OIL.—Spot, 8½d. per lb., drums extra, d/d buyer's works.

ANILINE SALTS.—Spot, 8½d. per lb. d/d buyer's works.

BENZALDEHYDE.—Spot, 1s. 8d. per lb., packages extra, d/d buyer's works.

BENZIDINE BASE.—Spot, 2s. 6d. per lb. 100% d/d buyer's works.

BENZOIC ACID.—Spot, 1s. 8½d. per lb. d/d buyer's works.

o-CRESOL 30/31° C.—£3 1s. 10d. per cwt., in 1 ton lots.

m-CRESOL 98/100%.—2s. 9d. per lb., in ton lots.

p-CRESOL 34·5° C.—1s. 9d. per lb., in ton lots.

DICHLORANILINE.—1s. 10d. per lb. f.o.r. works.

DIMETHYLANILINE.—Spot, 1s. 9½d. per lb., drums extra d/d buyer's works.

DINITROBENZENE.—8d. per lb.

DINITROCHLORBENZENE.—£74 per ton d/d.

DINITROTOLUENE.—48/50° C., 7½d. per lb.; 66/68° C., 9d. per lb f.o.r. works.

DIPHENYLAMINE.—Spot, 1s. 8d. per lb. d/d buyer's works.

a-NAPHTHOL.—Spot, 1s. 11d. per lb. d/d buyer's works.

B-NAPHTHOL.—Spot, £65 per ton in 1 ton lots, d/d buyer's works.

a-NAPHTHYLAMINE.—Spot, 1s. per lb. d/d buyer's works.

B-NAPHTHYLAMINE.—Spot, 2s. 9d. per lb. d/d buyer's works.

o-NITRANILINE.—5s. 11d. per lb.

m-NITRANILINE.—Spot, 2s. 6d. per lb. d/d buyer's works.

p-NITRANILINE.—Spot, 1s. 8d. per lb. d/d buyer's works.

NITROBENZENE.—Spot, 6½d. per lb, 5-cwt. lots, drums extra, d/d buyer's works.

NITRONAPHTHALENE.—9d. per lb.

R. SALT.—Spot, 2s. per lb. 100% d/d buyer's works.

SODIUM NAPHTHIONATE.—Spot, 1s. 6½d. per lb. 100% d/d buyer's works.

o-TOLUIDINE.—Spot, 8d. per lb., drums extra, d/d buyer's works.

p-TOLUIDINE.—Spot, 1s. 9d. per lb. d/d buyer's works.

m-XYLIDINE ACETATE.—3s. 1d. per lb. ex works.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 15s. to £10 5s. per ton. Grey £16 10s. to £17 10s. per ton. Liquo. 9d. per gall.

ACETONE.—£78 per ton.

CHARCOAL.—£6 to £8 10s. per ton, according to grade and locality

IRON LIQUOR.—1s. 3d. per gall. 32° Tw. 1s. per gall. 24° Tw.

WOOD CREOSOTE.—1s. 9d. per gall., unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 8d. to 3s. 11d per gall. Solvent, 4s. to 4s. 3d. per gall.

WOOD TAR.—£3 10s. to £4 10s. per ton

BROWN SUGAR OF LEAD.—£38 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 3d. per lb. according to quality; Crimson, 1s. 3d. to 1s. 5d. per lb., according to quality

ARSENIC SULPHIDE, YELLOW.—1s. 8d. to 1s. 10d. per lb.

BARYTES.—£5 10s. to £7 per ton, according to quality.

CADMIUM SULPHIDE.—4s. 10½d. to 5s. 3d. per lb.

CARBON BISULPHIDE.—£26 to £28 per ton, according to quantity; drums extra.

CARBON BLACK.—4d. to 4 1/16d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£40 to £50 per ton, according to quantity. drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.
DIPHENYLGUANIDINE.—2s. 9d. per lb.
LITHOPONE, 30%.—£20 to £22 per ton.
SULPHUR.—£9 10s. to £13 per ton, according to quality
SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.
SULPHUR PRECIP. B.P.—£55 to £60 per ton, according to quantity.
ZINC SULPHIDE.—8d. to 11d. per lb

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£37 per ton, ex wharf London, barrels free.
ACID, ACETYL SALICYLIC.—2s. 9d. to 2s. 11d. per lb., according to quantity.
ACID, BENZOIC B.P.—2s. to 2s. 3d. per lb., for synthetic product, according to quantity. Solely ex Gum, 1s. 6d. per oz.; 50-oz. lots, 1s. 3d. per oz.
ACID, BORIC B.P.—Crystal, £31 per ton; powder, £32 per ton; For one ton lots and upwards. Packed in 1-cwt. bags carriage paid any station in Great Britain.
ACID, CAMPHORIC.—19s. to 21s. per lb.
ACID, CITRIC.—1s. 6d. to 1s. 6¾d. per lb., less 5%.
ACID, GALLIC.—2s. 11d. per lb. for pure crystal, in cwt. lots.
ACID, MOLYBDIC.—5s. 3d. per lb. in ½ cwt. lots. Packages extra. Special prices for quantities and contracts.
ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d.
ACID, SALICYLIC, B.P. PULV.—1s. 5d. to 1s. 8d. per lb. Technical.—1s. to 1s. 2d. per lb.
ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.
ACID, TARTARIC.—1s. 1d. per lb., less 5%.
ACETANILIDE.—1s. 5d. to 1s. 8d. per lb. for quantities.
AMIDOL.—7s. 6d. to 9s. per lb., d/d.
AMIDOPYRIN.—7s. 9d. to 8s. per lb.
AMMONIUM BENZOATE.—3s. 3d. to 3s. 9d. per lb., according to quantity. 18s. per lb. ex Gum.
AMMONIUM CARBONATE B.P.—£36 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.
AMMONIUM MOLYBDATE.—4s. 9d. per lb. in ½ cwt. lots. Packages extra. Special prices for quantities and contracts.
ATROPHINE SULPHATE.—9s. per oz.
BARBITONE.—5s. 9d. to 6s. per lb.
BENZONAPHTHOL.—3s. to 3s. 3d. per lb.
BISMUTH CARBONATE.—6s. 6d. per lb.
BISMUTH CITRATE.—6s. 9d. per lb.
BISMUTH SALICYLATE.—6s. 7d. per lb.
BISMUTH SUBNITRATE.—5s. 6d. per lb.
BISMUTH NITRATE.—Cryst. 4s. 4d. per lb.
BISMUTH OXIDE.—8s. 6d. per lb.
BISMUTH SUBCHLORIDE.—8s. per lb.
BISMUTH SUBGALLATE.—6s. 9d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.
BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 0½d. per lb.; 12 W. Qts. 11½d. per lb.; 36 W. Qts. 11d. per lb.
BORAX B.P.—Crystal, £21 10s. per ton; powder, £22 per ton; For one ton lots and upwards. Packed in 1-cwt. bags carriage paid any station in Great Britain.
BROMIDES.—Ammonium, 1s. 9d. per lb.; potassium, 1s. 5½d. per lb.; granular, 1s. 5d. per lb.; sodium, 1s. 8d. per lb. Prices for 1 cwt. lots.
CALCIUM LACTATE.—B.P., 1s. 1½d. to 1s. 3d. per lb., in 1-cwt. lots.
CAMPHOR.—Refined flowers, 3s. to 3s. 2d. per lb., according to quantity; also special contract prices.
CHLORAL HYDRATE.—3s. 1d. to 3s. 4d. per lb.
CHLOROFORM.—2s. 4½d. to 2s. 7½d. per lb., according to quantity.
CREOSOTE CARBONATE.—6s. per lb.
ETHERS.—S.G. ·730—1s. to 1s. 1d. per lb., according to quantity; other gravities at proportionate prices.
FORMALDEHYDE, 40%.—37s. per cwt., in barrels, ex wharf.
GUAIACOL CARBONATE.—4s. 6d. to 4s. 9d. per lb.
HEXAMINE.—2s. 3d. to 2s. 6d. per lb.
HOMATROPINE HYDROBROMIDE.—30s. per oz.
HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.
HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 3s. per gall.
HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.
HYPOPHOSPHITES.—Calcium, 2s. 5d. per lb.; potassium, 2s. 8½d. per lb.; sodium, 2s. 7½d. per lb., in 1 cwt. lots, assorted.
IRON AMMONIUM CITRATE.—B.P., 2s. 5d. per lb. for 28 lb. lots. Green, 3s. 1d. per lb., list price. U.S.P., 2s. 4d. to 2s. 7d. per lb.
IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.
IRON QUININE CITRATE.—B.P., 8¼d. to 8¾d. per oz., according to quantity.
MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.
MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.
MENTHOL.—A.B.R. recrystallised B.P., 17s. per lb. net; Synthetic, 9s. 6d. to 11s. per lb.; Synthetic detached crystals, 9s. 6d. to 11s. per lb., according to quantity; Liquid (95%), 9s. per lb.
MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, crystals, 8s. 4d to 8s. 5d. per lb., levig., 7s. 10d. to 7s. 11d. per lb.: Corrosive Sublimate, Lump, 6s. 7d. to 6s. 8d. per lb., Powder, 6s. to 6s. 1d. per lb.; White Precipitate, Lump, 6s. 9d. to 6s. 10d. per lb., Powder, 6s. 10d. to 6s. 11d. per lb., Extra Fine, 6s. 11d. to 7s. per lb.; Calomel, 7s. 2d. to 7s. 3d. per lb.; Yellow Oxide, 7s. 8d. to 7s. 9d. per lb.; Persulph, B.P.C., 6s. 11d. to 7s. per lb.; Sulph. nig., 6s. 8d. to 6s. 9d. per lb. Special prices for larger quantities.
METHYL SALICYLATE.—1s. 3d. to 1s. 5d. per lb
METHYL SULPHONAL.—18s. 6d to 20s. per lb.
METOL.—9s. to 11s. 6d. per lb. British make.
PARAFORMALDEHYDE.—1s 9d. per lb. for 100% powder.
PARALDEHYDE.—1s. 4d. per lb.
PHENACETIN.—3s. 9d. to 4s. 1d. per lb.
PHENAZONE.—5s. 6d. per lb.
PHENOLPHTHALEIN.—5s. 11d. to 6s. 1½d. per lb.
POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—90s. 6d per cwt., less 2½ per cent.
POTASSIUM CITRATE.—B.P.C., 2s. 3d. per lb. in 28 lb. lots. Smaller quantities 1d. per lb. more.
POTASSIUM FERRICYANIDE.—1s. 7½d. per lb., in 125 lb. kegs
POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.
POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included f.o.r. London.
POTASSIUM PERMANGANATE.—B.P. crystals, 5½d per lb., spot.
QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins
RESORCIN.—2s. 10d. to 3s. per lb., spot.
SACCHARIN.—43s. 6d. per lb.
SODIUM BENZOATE B.P.—1s. 9d. per lb. for 1-cwt. lots.
SODIUM CITRATE, B.P.C., 1911, AND U.S.P. VIII.—1s. 11d. per lb., B.P.C. 1923, and U.S.P. IX—2s. 3d. per lb. Prices for 28 lb. lots. Smaller quantities 1d. per lb. more.
SODIUM FERROCYANIDE.—4d. per lb., carriage paid.
SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.
SODIUM NITROPRUSSIDE.—16s. per lb.
SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—95s. to 100s. per cwt. net. Crystals, 2s. 6d. per cwt. extra.
SODIUM SALICYLATE.—Powder, 1s. 10d. to 2s. 2d. per lb. Crystal, 1s. 11d. to 2s. 3d. per lb.
SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.
SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £29 10s. per ton, according to quantity. Delivered U.K.
SULPHONAL.—9s. 6d. to 10s. per lb.
TARTAR EMETIC, B.P.—Crystal or powder, 1s. 9d. to 2s. per lb.
THYMOL.—Puriss, 8s. 3½d. to 9s. 2d. per lb., according to quantity. Natural, 12s. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.
AUBEPINE (EX ANETHOL).—12s. per lb.
AMYL ACETATE.—2s. 6d. per lb.
AMYL BUTYRATE.—5s. per lb.
AMYL CINNAMIC ALDEHYDE.—10s. per lb.
AMYL SALICYLATE.—2s. 6d. per lb.
ANETHOL (M.P. 21/22° C.).—7s. per lb.
BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.
BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—1s. 10d. per lb.
BENZYL ALCOHOL FREE FROM CHLORINE.—1s. 10d. per lb.
BENZYL BENZOATE.—2s. 6d. per lb.
CINNAMIC ALDEHYDE NATURAL.—13s. 3d. per lb.
COUMARIN.—11s. per lb.
CITRONELLOL.—8s. per lb.
CITRAL.—8s. per lb.
ETHYL CINNAMATE.—6s. 6d. per lb.
ETHYL PHTHALATE.—2s. 9d. per lb.
EUGENOL.—9s. 3d. per lb.
GERANIOL (PALMAROSA).—17s. per lb.
GERANIOL.—7s. 6d. to 10s. per lb.
HELIOTROPINE.—6s. per lb.
ISO EUGENOL.—11s. 6d. per lb.
PHENYL ETHYL ACETATE.—11s. per lb.
PHENYL ETHYL ALCOHOL.—9s. per lb.
RHODINOL.—46s. per lb.
SAFROL.—2s. per lb.
TERPINEOL.—1s. 6d. per lb.
VANILLIN, EX CLOVE OIL.—13s to 15s. per lb. Ex Guaiaco 12s. 6d. to 13s. 9d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. per lb.
ANISE OIL.—5s. per lb.
BERGAMOT OIL.—10s. per lb
BOURBON GERANIUM OIL.—21s. per lb.
CAMPHOR.—Brown, 1s. 9d. per lb.
CANANGA.—Java, 9s. per lb.
CASSIA OIL, 80/85%.—4s. 9d. per lb.
CINNAMON OIL LEAF.—6s. 9d. per oz.
CITRONELLA OIL.—Java, 2s. 5d. per lb, pure, Ceylon, 2s. 5d. per lb., c.i.f. U.K. port.
LAVENDER OIL.—Mont Blanc, 38/40%, 10s. 6d. per lb.
LEMON OIL.—5s. 6d. per lb.
PEPPERMINT OIL.—English, 55s. per lb.; Wayne County, 13s. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, July 31, 1930.

THE market has moved along quietly steady lines with a fair amount of business being booked considering the prevalence of holidays in many districts. With the exception of an adjustment in prices of acetic acid there has been very little variation in prices.

General Chemicals

ACETONE.—A regular demand is being received with prices unchanged at £71 10s. to £80 per ton, according to quantity.

ACETIC ACID.—Prices have been adjusted to £36 5s. to £38 5s. for 80% technical, and £37 5s. to £39 5s. for 80% edible, delivered U.K. according to quantity, and there is a steady demand.

ACID CITRIC.—Only in quiet request at 1s. 6½d. to 1s. 7d. per lb., less 5 per cent.

ACID LACTIC.—A fair amount of business has been placed and the market is steady at £42 per ton for the 50% by weight pale quality.

ACID OXALIC.—In better request and the market is firm at £30 7s. 6d. to £32 per ton, according to quantity.

ALUMINA SULPHATE.—In quietly steady demand at £8 to £8 15s. per ton for the 17/18% iron free quality.

ARSENIC.—Still quoted at £15 15s. per ton free on rails at the mines, and demand is still far from active.

CREAM OF TARTAR.—A fair business has been booked at 90s. to 92s. per cwt., ex wharf, London.

COPPER SULPHATE.—In rather slow request at about £21 to £22 per ton, free on rails.

FORMALDEHYDE.—Continues in good demand with the price steady at £32 per ton.

LEAD ACETATE.—Unchanged at £40 per ton for white and £39 per ton for brown with a small business offering.

LEAD NITRATE.—Quiet at about £30 to £31 per ton.

LITHOPONE.—Steady at £19 15s. to £23 per ton according to grade.

CARBONATE OF POTASH.—A little more business has been booked with the market steady at about £26 10s. to £27 per ton for 96/98% arsenic free quality.

PERMANGANATE OF POTASH.—Unchanged at 5½d. per lb. for B.P. needle crystals, at which price there is a fair demand.

BICHROMATE OF SODA.—In steady request at 3⅜d. per lb., usual discounts for contracts.

SODIUM HYPOSULPHITE.—Photographic crystals in good demand at £14 15s. per ton, and commercial crystals at £8 10s.

SODIUM SULPHIDE.—A fair business is passing at unchanged prices ranging from £10 5s. to £11 5s. for solid and £11 5s. to £12 5s. for broken according to quantity, carriage paid.

TARTAR EMETIC.—A little more inquiry is being received and price is quoted unchanged at about 11d. per lb.

ZINC SULPHATE.—In steady demand at £12 10s. per ton.

Coal Tar Products

There is very little change to report in the market for Coal Tar Products from last week, prices remaining steady.

MOTOR BENZOL.—Firm at about 1s. 5½d. to 1s. 6½d. per gallon f.o.r.

SOLVENT NAPHTHA.—Remains firm at about 1s. 2½d. to 1s. 3d. per gallon.

HEAVY NAPHTHA.—Unchanged at about 1s. 1d. per gallon f.o.r.

CREOSOTE OIL.—Remains at 3d. to 3½d. per gallon f.o.r. in the North, and at 4d. to 4½d. per gallon in London.

CRESYLIC ACID.—Unchanged at 2s. per gallon for the 98/100% quality, and at 1s. 10d. per gallon ex works for the dark quality 95/97%.

NAPHTHALENES.—The firelighter quality is quoted at £3 10s. to £3 15s. per ton, the 74/76 quality at £4 to £4 5s. per ton, and the 76/78 quality at about £5 per ton.

PITCH.—Quoted at 37s. 6d. to 42s. 6d. per ton, f.o.b. East Coast Port, but there is little inquiry.

Nitrogen Fertilisers

Sulphate of Ammonia.—Export.—During the week the market has remained exceptionally quiet, buyers eagerly awaiting the announcement of prices. Only a very small amount of business has been transacted, but at a firmer price. *Home.*—Only very small home sales for immediate consumption have been reported.

Nitrate of Soda.—Provisional prices have been announced in certain European markets, but with delivery to consumers' stations. As prices last year were at ports, they are not comparable. It seems, however, that on the average prices will work out slightly lower for consumers. In any case, these prices may be subject to alteration shortly.

Latest Oil Prices

LONDON, July 30.—LINSEED OIL was firmer. Spot, £35 15s.; August, £32 5s., paid; September-December, £31 15s., sellers; January-April, £29 15s., sellers. COTTON OIL quiet. Crude, £27; refined common edible, £32 10s. RAPE OIL.—Crude extracted, £34; refined, £35 10s. TURPENTINE.—American, unchanged; spot, 35s. 6d.; August, 25s. 6d.; September-December, 36s. 3d. per cwt.

HULL.—LINSEED OIL.—Spot, £34; August, £33 10s.; September-December, £32 10s.; January-April, £30 15s. COTTON OIL naked. Egyptian crude, spot, £28 5s.; edible refined, spot, £31; technical, spot, £30 10s.; deodorised, spot, £33. PALM KERNEL OIL.—Crude, naked, 5½ per cent., spot, £28 5s. GROUNDNUT OIL.—Crushed extracted, spot, £31; deodorised, spot, £35. SOYA OIL.—Extracted and crushed, spot, £27 15s.; deodorised, spot, £31 5s. RAPE OIL.—Crushed extracted, spot, £34 10s.; refined, spot, £36 10s. per ton. TURPENTINE.—Spot, 37s. 9d. per cwt., net cash terms, ex mill.

Scottish Coal Tar Products

WATER white products are inclined to fall in price owing to the want of orders and consequent increase of stocks, but other products remain unaltered. The cresylic acid market is disappointing, although quotations are keeping fairly steady.

Cresylic Acid.—While few orders are being placed, makers' price are reasonably steady. Pale 99/100%, 1s. 10d. to 1s. 11d. per gallon; pale 97/99%, 1s. 9d. to 1s. 10d. per gallon; dark 97/99%, 1s. 8d. to 1s. 9d. per gallon; high boiling, 1s. 9d. to 1s. 11d. per gallon; all ex makers' works in bulk.

Carbolic Sixties.—There is very little demand at the moment, and value is nominal at about 2s. to 2s. 2d. per gallon for ordinary grades.

Creosote Oil.—A fair volume of business is passing, but prices remain easy. Specification oil, 3d. to 3¼d. per gallon; gas works ordinary, 3¼d. to 3½d. per gallon; washed oil, 3¼d. to 3⅝d. per gallon; all free on rails works.

Coal Tar Pitch.—Very few order are reported in this district, and nominal value is about 47s. 6d. per ton, f.a.s. Glasgow for export, and about 50s. per ton f.o.r. works for home trade.

Blast Furnace Pitch.—Controlled prices remain unchanged at 30s. per ton f.o.r. for home trade, and 35s. per ton f.a.s. Glasgow for export. Further furnaces may be "damped down" shortly, which will affect production.

Refined Coal Tar.—The throughput is well maintained, and quotations are steady at 3½d. to 4d. per gallon f.o.r. makers' works in buyers' packages.

Blast Furnace Tar.—Remains at 2⅝d. per gallon f.o.r.

Crude Naphtha.—Any quantities available command about 4d. to 4½d. per gallon ex works in bulk.

Water White Products.—Easier, with stocks increasing. Motor benzol, 1s. 6d. to 1s. 6½d. per gallon; solvent naphtha, 90/160, 1s. 2½d. to 1s. 3½d. per gallon; heavy naphtha, 90/190, 1s. 0½d. to 1s. 1½d. per gallon; all in bulk quantities ex makers' works.

South Wales By-Products

SOUTH WALES by-product activities remain restricted. Pitch continues to be in poor demand, and prices remain nominal round about 43s. to 45s. per ton, f.o.b. Road tar has a fair call at about 13s. per 40-gallon barrel. Solvent naphtha remains steady at from 1s. 1½d. to 1s. 3½d. per gallon, but heavy naphtha is quiet at from 10d. to 1s. per gallon. Motor benzol is in good request at from 1s. 1½d. to 1s. 3½d. per gallon, but creosote has fallen off and is weak at from 2⅝d. to 3⅜d. per gallon. Refined tars continue to have a fair demand, with values unchanged for coke oven and gasworks tar. Sulphate of ammonia has practically no call round about £10 2s. per ton, delivered. Patent fuel and coke exports remain unsatisfactory. Patent fuel prices for export are:—21s. 6d. to 22s., ex ship, Cardiff; 20s. to 21s., ex ship Swansea, and 20s. ex ship Newport. Coke prices are:—Best foundry, 35s. to 37s.; good foundry, 27s. 6d. to 32s. 6d.; furnace, 21s. to 21s. 6d. Oil imports into Swansea over the four weeks ending July 22 amounted to 7,495,490 gallons.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing this firm's independent and impartial opinions.*

Glasgow, July 29, 1930.

GLASGOW Fair Holidays have naturally had a serious effect on the Scottish heavy chemical market, but export business continues with an upward tendency.

Industrial Chemicals

ACETONE B.G.S.—£71 10s. to £80 per ton, ex wharf, according to quantity. Inquiry remains satisfactory.

ACID ACETIC.—Prices ruling are as follows:—Glacial 98/100%, £53 to £64 per ton; pure, £37 10s. per ton; technical 80%, £37 10s. per ton, ex wharf.

ACID BORIC.—Granulated, £22 per ton; crystals, £23 per ton; powder, £24 per ton, packed in 1 cwt. bags delivered free, Great Britain, in 1 ton lots and upwards.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy. Dearsenicated quality, 5s. 6d. per carboy, ex works, full wagon loads.

ACID NITRIC 80° quality.—£24 10s. per ton, ex station, full truck loads.

ACID OXALIC 98/100%.—On offer at the same price, viz., 3¼d. per lb., ex store. Offered from the Continent at 3⅛d. per lb., ex wharf.

ACID SULPHURIC.—£3 2s. 6d. per ton, ex works, for 144° quality; £5 15s. per ton for 168°. Dearsenicated quality, 20s. per ton extra.

ACID TARTARIC B.P. CRYSTALS.—Quoted 1s. 4d. per lb., less 5% ex wharf. On offer for prompt delivery from the Continent at 1s. 4⅛d. per lb., less 5% ex wharf.

ALUMINA SULPHATE.—Quoted at round about £8 15s. per ton, ex store.

ALUM, LUMP POTASH.—Now quoted £8 7s. 6d. per ton, c.i.f. U.K. ports. Crystal meal, about 2s. 6d. per ton less.

AMMONIA ANHYDROUS.—Quoted 10¼d. per lb., containers extra and returnable.

AMMONIA CARBONATE.—Lump quality quoted £36 per ton; powdered, £38 per ton, packed in 5 cwt. casks, delivered U.K. stations or f.o.b. U.K. ports.

AMMONIA LIQUID 880°.—Unchanged at about 2½d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station. Fine white crystals offered from the Continent at about £17 5s. per ton, c.i.f. U.K. ports.

ANTIMONY OXIDE.—Rather easier, and spot material now obtainable at round about £30 per ton, ex wharf. On offer for shipment from China at about £27 per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Quoted £18 per ton, ex wharf, prompt shipment from mines. Spot material still on offer at £19 15s. per ton, ex store.

BARIUM CHLORIDE.—In good demand and price about £11 per ton, c.i.f. U.K. ports. For Continental material our prices would be £10 per ton, f.o.b. Antwerp or Rotterdam.

BLEACHING POWDER.—British manufacturers' contract price to consumers unchanged at £6 15s. per ton, delivered in minimum 4-ton lots. Continental now offered at about the same figure.

CALCIUM CHLORIDE.—Remains unchanged. British manufacturers' price, £4 15s. per ton to £5 5s. per ton, according to quantity and point of delivery. Continental material on offer at £4 15s. per ton, c.i.f. U.K. ports.

COPPERAS GREEN.—Unchanged at about £3 15s. per ton, f.o.r. works or £4 12s. 6d. per ton, f.o.b. U.K. ports.

FORMALDEHYDE 40%.—Now quoted £33 10s. per ton, ex store. Continental material on offer at about £33 per ton, ex wharf.

GLAUBER SALTS.—English material quoted £4 10s. per ton, ex station. Continental on offer at about £3 per ton, ex wharf.

LEAD, RED.—Price now £34 10s. per ton, delivered buyers' works.

LEAD, WHITE.—Quoted £46 per ton, c.i.f. U.K. ports.

LEAD, ACETATE.—White crystals quoted round about £39 to £40 per ton, ex wharf. Brown on offer at about £2 per ton less.

MAGNESITE, GROUND CALCINED.—Quoted £8 15s. per ton, ex store. In moderate demand.

METHYLATED SPIRIT.—Industrial quality, 64 O.P., quoted 1s. 8d. per gallon, less 2½% delivered.

POTASSIUM BICHROMATE.—Quoted 4½d. per lb., delivered U.K. or c.i.f. Irish ports, with an allowance for contracts.

POTASSIUM CARBONATE.—Spot material on offer at £26 10s. per ton, ex store, offered from the Continent at £25 5s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE, 99¾/100% POWDER.—Quoted £26 5s. per ton, ex wharf. Crystals, 30s. per ton extra.

POTASSIUM NITRATE.—Refined granulated quality quoted £20 17s. 6d per ton, c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton, ex store.

POTASSIUM PERMANGANATE B.P. CRYSTALS.—Quoted 5d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Spot material quoted 7d. per lb., ex store. Offered for prompt delivery from the Continent at about 6¾d. per lb., ex wharf.

SODA, CAUSTIC.—Powdered 98/99%, £17 10s. per ton, in drums, £18 15s. per ton in casks. Solid 76/77% £14 10s. per ton in drums, £14 12s. 6d. per ton for 70/72% in drums, all carriage paid buyers' station. Minimum 4-ton lots. For contracts 10s. per ton less.

SODIUM BICARBONATE.—Refined recrystallised £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3¾d. per lb. delivered buyers' premises, with concession for contracts.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality 27s. 6d. per ton extra. Light soda ash £7 13s. per ton, ex quay, minimum 4-ton lots, with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum 4-ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum 4-ton lots. Prices for this year unchanged.

SODIUM NITRATE.—Chilean producers now offer at £10 2s. per ton, carriage paid buyers' sidings, minimum 6-ton lots, but demand in the meantime is small.

SODIUM PRUSSIATE.—Quoted 5¼d. per lb., ex store. On offer at 5d. per lb., ex wharf, to come forward.

SODIUM SULPHATE (SALTCAKE).—Prices 55s. per ton, ex works, 57s. 6d. per ton delivered, for unground quality. Ground quality 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Price for home consumption: solid 61/62%, £9 15s.; broken 60/62%, £10 15s. per ton. Crystals 30/32%, £7 17s. 6d. per ton, all delivered buyers' works on contract minimum 4-ton lots. Special prices for some consumers. Spot material, 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; Roll, £10 10s. per ton; rock, £9 5s. per ton; ground American, £9 5s. per ton, ex store.

ZINC CHLORIDE 98%.—British material now offered at round about £20 per ton f.o.b. U.K. ports.

ZINC SULPHATE.—Quoted £12 per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

The China Clay Industry

Falling Off in Trade

A LULL is reported in the China Clay industry, and the total output for the first six months of the present year is 409,240 tons of China Clay, against 451,377 tons for the corresponding period of 1929; 20,637 tons China stone, against 24,803 tons; and 11,517 tons of ball clay, against 12,462 tons.

Nevertheless, although the falling off of trade, especially during the past three months, has been rather disappointing, the China Clay producers generally are hopeful of even the present year being quite as favourable as last. Deliveries to the United States have been satisfactory, but the principal causes operating detrimentally have been on the Continent and in India.

The trouble in India is having a disastrous effect on the demand for English clays for the moment, and the situation is illustrated strikingly by the comparison of monthly consignments to that country throughout 1929, which averaged 2,688 tons. In May only 246 tons were dispatched.

Before the war Germany reached an annual purchase of 94,000 tons, and for some time since the German markets were on the increase. The monthly consumption during 1929 reached nearly 3,500 tons, but only 757 tons were exported to that country in May.

The Netherlands purchased about 68,000 tons yearly before the war. That demand has been reduced, and their imports of British clay in May were 2,500 tons down compared with the average monthly consumption throughout 1929. France, Italy, Spain, and Norway were slack relatively in their consignments. Belgium seems to have been the only country to maintain a fair amount of trade.

The aggregate shipments at Fowey for the present year reveal the depression which has fallen upon the industry. In January last there were 81,670 tons dealt with; 65,842 tons in February; 59,275 tons in March; 43,427 tons in April; 55,417 tons in May; and 42,564 tons in June.

Manchester Chemical Market

[From Our Own Correspondent.]

Manchester, July 31, 1930.

The weight of business going through in chemical products this week has been of relatively limited extent, and most of the new orders booked have been for small parcels. Unfortunately, there seems to be not the slightest indication at present of the depression which is overhanging the cotton textile industry lifting, and this is the factor which, in this part of the country, is the chief restrictive influence on the movement of chemicals. Current inquiry is very moderate and sellers are not disposed to anticipate much business during Bank Holiday week. Meanwhile, there have been few notable changes in prices during the past week, the reduction in acetic acid being the outstanding feature.

Heavy Chemicals

Bichromate of soda is selling in moderate quantities, with offers maintained on the basis of 3⅜d. per lb. Hyposulphite of soda is rather a quiet section, but at about £15 5s. per ton for the photographic quality, and £9 for the commercial, values are pretty much as before. Sulphide of sodium is on the easy side and buying interest is slow; the 60–65 per cent. concentrated solid quality is quoted at about £9 per ton, and the commercial grade at about £7 15s. Saltcake is the subject of a quiet trade and prices keep up at round £3 per ton. There is a moderate demand about for alkali, and values are firm on the basis of £6 per ton, bicarbonate of soda at £10 10s. being in a somewhat similar position. Caustic soda is firm, with contract prices ranging from £12 15s. to £14 per ton, according to strength, a quietly steady movement of this material being reported. Prussiate of soda is in moderate request, current values quoted here running from 4¾d. to 5¼d. per lb. Chlorate of soda is attracting only limited attention, with sales reported at round £24 10s. per ton. With regard to dibasic phosphate of soda, buying interest is on a limited scale, although prices are unchanged on the week at £11 per ton.

A quiet trade is passing in the case of caustic potash, offers of which are at up to £30 per ton. Signs of easiness are still to be met with in respect of carbonate of potash, although at from £24 10s. to £25 per ton there has been little actual change on balance. Bichromate of potash meets with a quietly steady call and prices keep up at about 4¾d. per lb., less discounts according to quantity. Permanganate of potash is only in moderate request at the moment, but quotations in this section are maintained at 5¼d. per lb. for the commercial quality, and 5½d. or thereabouts for the B.P. grade. There is a fair movement of yellow prussiate of potash, which is offered at from 6¾d. to 7¼d. per lb., according to quantity. Chlorate of potash is unchanged at £26 per ton, with buying interest in this material somewhat poor.

Sulphate of copper is selling in moderate quantities at an average price of about £22 10s. per ton, f.o.b. A quiet business is going through in the case of arsenic, and values are steady at up to £16 per ton at the mines for white powdered, Cornish makes. Acetate of lime is slow and not too strong so far as prices are concerned, grey being quoted at about £14 10s. per ton and brown at £7 10s. The lead products are not actually changed on the week, but the undertone seems to be steadier in sympathy with the improvement in the metal; nitrate is offering at round £29 10s. per ton, and white and brown acetate at £36 and £35.

Acids and Tar Products

Makers of acetic acid have this week cut prices of the glacial quality to £47 to £51 per ton, according to quality, with the 80 per cent. commercial grade now quoted at £37 5s. per ton in ton lots. Oxalic acid is reasonably steady at about 32s. per cwt., ex store, although only a quiet trade in this material is being put through. Tartaric acid is in moderate inquiry, with values still at about 1s. 1¼d. per lb. Citric acid is fairly steady at the moment at 1s. 6½d. per lb., a quiet business being done.

In the case of the by-products, pitch is attracting little attention, and prices are nominal on an export basis of 47s. 6d. per ton, f.o.b. Values of creosote oil are steady at from 3d. to 4d. per gallon, naked. Solvent naphtha is quoted at about 1s. 2d. per gallon, and a moderate demand is reported. Carbolic acid is quiet, 7¼d. per lb. for crystals and 2s. 2d. per gallon for crude 60's.

World Chemical Production

Dresdner Bank's Estimate of 1928 Figures

The chemical industry of the world, measured in value of production, has already outstripped numerous important branches of industry, both in raw material production and in manufacture, states the Dresdner Bank in a review of world chemical trade. World production during 1928 is reported to have reached 24,000,000,000 reichsmarks, which is contrasted with a world output of 18,510,000,000 reichsmarks during 1924.

No efforts have been made to place a value on world chemical production since the estimate of the 1924 output reported to the Geneva Conference. The Dresdner Bank's allotment to the United States for that year, however, is 45·4 per cent., and its review of industry for 1928 places the United States production at 45·8 per cent. Germany, which was given 16·2 per cent. of the 1924 output, now has a share of 16·7 per cent. of the world total, or an increase of ·5 per cent. during the four-year period, as against an increase of ·4 per cent. for the United States. Other nations' shares in the 1924 and 1928 world chemical output are estimated as follows: Great Britain and Ireland, 12·5 per cent., against 13·5 per cent.; Sweden, ·8, against 1·1; Russia, 4·2, against 2·4; Canada, 2·5, against 2·5; and other countries, 17·5 per cent., against 18·9 per cent. The Bank concedes that all the statistics concerning the volume of production may leave much to be desired as to accuracy.

The Dresdner Bank reviews the position of the large manufacturing groups within their respective countries. In Germany, it finds that I.G. Farbenindustrie controls 100 per cent. of the dyestuffs production, about 85 per cent. of synthetic nitrogen and about 90 per cent. of sulphuric and nitric acid output. In Great Britain Imperial Chemical Industries, Ltd., accounts for about 40 per cent. of dyes, 100 per cent. of nitrogen and practically the entire inorganic chemical industry. In France, Etablissements Kuhlmann, together with Manufacture de Glaces and Produits Chimiques de Saint-Gobain, accounts for 80 per cent. of the dyes produced, 30 per cent. of nitrogen, 70 per cent. of acids and about 70 per cent. of superphosphate. In Belgium, Union Chimique Belge controls 100 per cent. of the output of sulphuric and nitric acids, and an undetermined amount of synthetic nitrogen. In Italy, Montecatini interests account for 60 per cent. of nitrogen, 60 per cent. of sulphuric acid and 70 per cent. of superphosphate. They are also dominating in Italy's output of pyrites (about 80 per cent.) and sulphur (over 30 per cent.).

Tariff Changes

Belgium.—The commercial treaty with Switzerland, whose clauses apply also to goods imported from the United Kingdom, came into force on July 15. The duty on common acetone (propanone) is now 20 francs for 100 kilogs. (instead of 15 francs), and on prepared medicaments 12 per cent. ad val. (instead of 15 per cent. ad val.).

Poland.—Until December 31 duties on the undermentioned goods are payable at the following percentage of the normal duty: graphite, 35 per cent.; barium peroxide, 20 per cent.; concentrated nitric acid and nitrose, 75 per cent.; potassium permanganate, 20 per cent.; benzaldehyde for the manufacture of synthetic dyes, 15 per cent.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal" have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

Egypt.—The Egyptian Ministry of Education is calling for tenders to be presented in Cairo by September 15, for the supply of "Foam" and "Acid" fire extinguishers. (Ref. No. A.X. 9,931).

Turkey.—The Turkish Department of Posts, Telegraphs and Telephones is calling for tenders, to be presented in Angora by September 15, for the supply of manganese dioxide and graphite. (Ref. No. B.X. 6,684.)

You need

sound fire protection if, when that outbreak of fire occurs, prompt extinguishment is to be assured. To have fire extinguishers at hand is not sufficient unless they are of the right type for the risk which they protect. An appliance may be suitable, from every point of view, for installation in an office, but it may be worse than useless in another part of the works.

There is a unit of Foamite Protection for every risk, no matter what the nature, and Foamite Engineers will, without obligation, survey premises and make recommendations.

Send to Foamite Firefoam, Ltd., 55/57, Gt. Marlborough St., London, W.1, for a free copy of the illustrated booklet, "Safeguarding Your Property."

Foamite Protection

Telephone: Regent 3105/6/7.
Telegrams: Foamite, Wesdo, London.

New Chemical Trade Marks

Applications for Registration

These lists are specially compiled for us from official sources by Gee and Co., Patent and Trade Mark Agents, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to August 23, 1930.

DUROBASE.

513,820. Class 1. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. British Dyestuffs Corporation, Ltd., Hexagon House, Blackley, Manchester; manufacturers. June 18, 1930. To be Associated with No. 513,821 (2,730).

DUROSALT.

513,821. Class 1. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives. British Dyestuffs Corporation, Ltd., Hexagon House, Blackley, Manchester; manufacturers. June 18, 1930. To be Associated with No. 513,821 (2,730).

EPHRELIX.

513,751. Class 1. Chemical substances prepared for use in medicine and pharmacy. Evans, Sons, Lescher and Webb, Ltd., 56, Hanover Street, Liverpool, Lancashire; wholesale druggists. June 16, 1930. To be Associated with No. 513,753 (2,730) and another.

EPHRETUSS.

513,753. Class 1. Chemical substances prepared for use in medicine and pharmacy. Evans, Sons, Lescher and Webb, Ltd., 56, Hanover Street, Liverpool, Lancashire; wholesale druggists. June 16, 1930. To be Associated with No. 513,751 (2,730) and another.

Training for Research

Sir J. J. Thomson on Changes at Cambridge

A STRIKING feature about modern Cambridge was the great development of post-graduate study and research, said Sir J. J. Thomson, in his inaugural address at the Cambridge Summer Meeting on Friday, July 25. Research was now an integral part of the training of a considerable number of the students. When he first began to study science in the early seventies, the opportunities for research were very meagre. There were very few laboratories, practically no scholarships to enable a man without private means to stay on after completing his undergraduate course, and no career for him in after life if he did so. Now all this is changed. The number of laboratories had increased a hundredfold, the number of scholarships was now sufficient to give a really first-class man an excellent chance of receiving, if he was in need of it, assistance in getting a training in research.

As for opening up a career, the modern recognition of the importance of science in our industries had created a demand for men trained in research, which, for the moment, was greater than the supply. Research had become a profession, and a fairly lucrative one. The effect of a post-graduate course of research on the mental development of the student was most striking. He gained independence of thought, maturity of judgment, self-reliance. His critical powers were strengthened, and his enthusiasm for science increased.

It was important, however, that at this stage his teachers should regard research as an educational training, and not as a means of getting as many scientific results as possible. The student should be encouraged to overcome his difficulties by his own efforts, and the assistance given by the teacher should not be more than was necessary to keep him from being disheartened by failure, and to prevent the work getting on lines which could not lead to success.

Forty years' experience with research students had convinced him that the great danger of these courses of research was over-specialisation, and it was one which needed great care to avoid.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

BRITISH-NETHERLANDS ARTIFICIAL SILK CO., LTD., London, S.W. (M., 2/8/30.) Registered July 14, £850 charge, to G. M. E. van Suchtelen, Arnhem (Holland); also registered July 14, £496 charge, to J. D. W. Hubbeling, Pizzighettone (Italy); also registered July 14, £354 charge, to P. Kuiper, Pizzighettone (Italy); all charged on land, buildings, etc., at Wigton.

M. & B., LTD., London, E., oil and grease manufacturers. (M., 2/8/30.) Registered July 14, debenture, to Bank; general charge. *Nil. April 16, 1929.

London Gazette, &c.

Companies Winding Up Voluntarily

PEET AND CO., LTD. (C.W.U.V., 2/8/30.) Statutory meeting of creditors at the Talbot Hotel, Kirkgate, Bradford, on Friday, August 1st, at 3 p.m. Creditors' claims to H. A. Horsfield, incorporated accountant, 21, Forster Square, Bradford.

THE STANDARD ANHYDROUS AMMONIA CO., LTD. (C.W.U.V., 2/8/30.) By special resolution, July 14. E. S. Lennard appointed as liquidator.

Receiverships

CHEMISTS MANUFACTURING CO., LTD. (R., 2/8/30.) M. W. H. Lancaster, of 46, Basinghall Street, E.C.2, was appointed receiver on June 24, 1930, under powers contained in debentures dated December 29, 1929.

HICKSON AND PARTNERS LTD. (R., 2/8/30.) J. W. G. Butterfield, of 2, Darley Street, Bradford, was appointed receiver and manager on July 11, 1930, under powers contained in first debenture dated October 7, 1926.

New Companies Registered

THE BRITISH TITAN PRODUCTS CO., LTD., 95, Gresham Street, London, E.C.2.—Registered as a "private" company on July 26. Nominal capital, £25,000 in £1 shares. To promote the production and use of titanium, zinc, lead and other metals or their compounds, derivatives and alloys, in particular titanium pigments, composite and all other pigments; to carry on all kinds of research work incident or relating to the production and use of titanium, zinc, lead and other metals and their alloys and compounds; to carry on all kinds of metallurgical operations; manufacturing chemists, manufacturers and producers of and dealers in sulphuric and other acids, alkalis, chemicals and chemical substances, etc. A subscriber: F. A. Crew, 95, Gresham St., London, E.C.2.

JOHN POYNTER, SON AND MACDONALDS, LTD., 189, St. Vincent Street, Glasgow. Registered in Edinburgh on July 19. Nominal capital, £30,000 in £1 shares. Manufacturers of and dealers in animal charcoal, sulphate of ammonia, bone oil and baking powders; tallow melters, soap manufacturers, oil and lard refiners, hide and skin brokers' etc. Directors: Wm. Hamilton Stewart Macdonald, A. Stewart Macdonald, and R. J. G. Macdomald.

G. R. SHAW, LTD.—Registered July 28. Nominal capital, £500 in £1 shares. To acquire the business of a chemical merchant now carried on by G. R. N. Shaw at 6, St. Mary's Gate, Manchester, as "G. R. Shaw," and to carry on the business of manufacturing chemists and druggists, chemists, and druggists' sundriesmen, tillage merchants, seedsmen, chemical manufacturers, etc. Directors: G. R. N. Shaw, 12, Lawton Road, Heaton Chapel, Stockport; Mrs. Alexandra E. M. Shaw.